THE INDUSTRIALIST

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THE INDUSTRIALIST.

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INDUSTRIAL EDUCATION.

Not the least of the things of which Kansas has a right to be proud is its magnificent educational system. At the start a wise and vigorous policy was adopted for the education of its youth; and ever since, whether in war or peace, poverty or plenty, the State has steadily developed and carefully fostered its various educational agencies. In addition to its munificent endowment of the public schools, it has provided higher institutions for three distinct kinds of instruction, namely, normal schools for the special training of public school teachers; a university for the education of those proposing to enter the professions of law, medicine or theology; and an agricultural college for the practical education of those who will engage in any of the "industrial professions or pursuits," as distinguished from the "learned professions." The relative demand for the three forms of education is indicated by the proportion in which the citizens of Kansas follow these vocations, as shown by the last United States census. Of every one hundred persons engaged in a vocation by which money is gained, the ratios were as follows:

Normal education:		
Teachers	1.13	= 1.13
Professional education:		
Ministers	0.43	
Lawyers	0.55	
Doctors	0.73	= 1.71
Industrial education:		
In agriculture	59.13	
In manufacturing and mechanical	14.63	
In personal service	13.89	
In trade and transportation	9.51	= 97.16
		100.00

AGRICULTURAL COLLEGE.

Recognizing the need for an education which should especially prepare the rising generations for an intelligent and successful practice of those vocations which are followed by ninety-seven out of each hundred of its citizens, the first institution endowed and put in operation by the State was its Agricultural College, so named because of the fact that agriculture is, both numerically and actually, the chief of these vocations. The title, "Agricultural" College, is apt to mislead those who are not familiar with the above fact, and also with the further fact that the acts of both Congress and of Kansas provide for an "industrial," as distinguished from a "professional" education.

ENDOWMENT.

The endowment received from the United States Government consisted of 81,601 acres of choice land, all of which had been sold at date of last report, except 31,461 acres now on the market. The proceeds from the sale of lands are invested in school bonds, and the securities in hand amounted to $238,101.28 by last report. The annual income from this endowment is about $20,000, out of which all expenses of instruction are paid. The only aid received from the State is for the erection of buildings, in accordance with the conditions of the congressional grant. This is the only one of the State's institutions which is not dependent upon the tax-payer for its maintenance.

LOCATION.

It is situated one mile from Manhattan, Riley county, one hundred and twenty miles west of the Missouri River, in the heart of the finest agricultural State in America. The Kansas Pacific Railway, with its connecting lines, gives speedy communication with every quarter.

COURSE OF STUDY.

The course of study is shaped with direct reference to giving an industrial as distinct from a professional education. It makes the pupil intelligent and expert in the use of the English language; in the use of numbers as employed by the farmer, book-keeper and engineer; and in the use of lines as employed by the carpenter, painter and architect. Words, figures and lines are tools which all men use. It then gives thorough instruction and laboratorial or field drill in the following sciences as essentially useful to an intelligent and successful farmer: Physiology, Practical Agriculture, Natural Philosophy, Botany, Entomology, Practical Horticulture, Landscape Gardening, Inorganic Chemistry, Organic and Analytical Chemistry, Surveying, Geology, Mineralogy, Zoology, Meteorology, Agricultural Chemistry, Political Economy, Practical Law and Logic. It has an equally practical and effective course for the education of woman as a woman, instead of as a man, and as a worker instead of as a butterfly. Then, it has a well-stocked farm and nursery, and well-equipped shops, for giving boys practice in farm and nursery work, and in wood and iron work, and for giving girls drill in dress-making, printing, telegraphy, carving, engraving and music.

Elementary Forces in Agriculture.

The good farmer seeks to so cultivate his soil as to produce the best results in tillage with the least outlay in labor and material. This, however, does not mean the cultivation of the soil with but little labor or material, although it is true that some soils are cultivated at far less expense than others. On the contrary, the soil inherently inferior, cultivated in a superior manner, may and will produce better crops than a better soil indifferently cultivated. Therefore, it is safe to say — a proposition understood by all good farmers — that good cultivation is the basis of success in agriculture.

The effects of cultivation, used in the sense of stirring the soil, are two-fold — one mechanical and the other chemical. The rendering of the soil mellow, porous, disintregrable and homogeneous in its character is mechanical. The effect of this mechanical alteration of the soil allows chemical action and reaction to take place, unlocking, changing, setting free, and rendering soluble the mineral constituents always found in the soil, so they are capable of being taken up by the spongioles, converted into sap and become tissue. The organic elements of the soil are also rendered more available. The roots are more easily extended in the soil, so that in a soil friable and light in its texture, the plant may have two, three or four-fold the power of assimilating plant food that it would in a soil more hard and unyielding in its nature.

Air, water and frost are the three great disintegrators. It is these three agents that primarily broke down the rock formation of the earth,—for all soils wore originally solid rock. It is these three agents that have covered the face of the earth with fertile soil, our sands, gravels, loams and clays; these again are more or less fertile according to their divisibility, porosity and the constituents of fertility they may contain, from having time and again been moved and removed, mixed and intermixed, ground and again shaken up, spread and re-spread over a continent, until granite, quartz, shale, limestone and the various masses which go to make up the rock formation of the earth, have been carried hither and thither by glacial or lacustrine action of water, ground beneath the tremendous force of glaciers, rolled along the torrents that arose from them, deposited as sand and gravel along their banks, or carried out into the great lakes beyond, and then deposited as silt, loam and clay, to be at length converted by subsequent upheaval or natural drainage into the vast and fertile prairies, at once the hope and glory of agriculture in the West. It has also formed the soil of the great forest areas of fertile regions in the South, with its valleys of wonderful richness. So again to this cause is the hill and valley region of the East indebted for its fertility, as well as that of the far West and California those of the latter country lacking only irrigation to render them the most fertile on the globe.

So also does the air possess most wonderful properties of fertilization. By the constant action of its oxygen, it is continually destroying and creating; or, rather, converting into new forms all which it is capable of acting upon; and there are few substances which can resist the action of this wonderful agent, which may be truly called the great builder up and the great destroyer, destroying only that it may again build up. It is the only known source from which comes the nitrogen of the soil, so indispensable to vegetation. Again, the air carries with it into the depth of a porous soil much moisture always held mechanically; and a curious property of the air is that by an elevation of its temperature by about 27 degrees Fahrenheit, it is rendered capable of holding double its previous quantity of moisture. It descends into the depths of the soil, and, being cooled, loses some of its moisture, and with it whatever this moisture — the universal solvent of nature — may hold in solution; loses some of its oxygen, perhaps, and with it some of its nitrogen as a balance. Thus we see how through long ages fragments are eroded from the solid rock, rolled about, carried by wind and water, ground in the mills of the gods, and at last thoroughly disintegrated, rest where we now find them, forming these fertile hill prairies of northern Illinois, famous for its dairy products, its wool, its small grain and Indian corn. The same forces have composed the more level prairies of central Illinois, the great corn zone, the true home of fat steers and swine. Going still farther south, we come to the timbered hill region of the State, so famous for its winter grain and its great wealth of fruit. All were formed by the same great forces of nature — from the solid rock. Those silent but irresistible forces, air, water and frost, — formed probably in the order named, for before there was water there must have been air, and both air and water before frost. How wonderful! How awe inspiring the vast epochs of time that must have elapsed to bring about these great results — results which too many of our farmers are seeking to destroy, or at least lock up, by a slipshod and uncertain, not to say vicious, system of tillage. Fortunately, the last agent mentioned, and the last created of these great forces of nature mentioned — for heat, that source of all force, must ever stand alone in awe-inspiring majesty where it was placed by its maker,— this last force is frost, one of the greatest blessings ever vouchsafed to the slack farmer of the North, and the great and beneficent helper of all. It is frost acting upon the second great agent of nature mentioned, working silently but surely through the great ages of the past, that has kept our soils of the North friable and disintegrable. Every farmer knows that a post set in a soil liable to heave — and all close soils, that is, all soils not composed largely of sand and gravel, do heave — all farmers know that the post, if not set below the line of frost, will gradually, it is true, but surely, be raised more and more until at last it may be thrown entirely out upon the surface.

It is owing to a simple law of nature by which water, in the act of freezing, expands. It is this law that compels the water which finds its way into the crevices of rocks, along the cliffs, by its wonderful expansive power, to still force the mass farther and father apart, until at last, breaking away, it goes thundering down into the valley below. It is frost, by its expansive force upon the moisture of the soil, that separates the particles one from another; expands and even disintegrates them, and thus renders them again light and porous with each succeeding spring. Thus we see that frost may become one of the most active agents in breaking down and pulverizing the soil of temperate climates. It is thus that frost exercises its most beneficial action. For this reason the soil of temperate climates, which are subject to be frozen in winter, are found to be the most fertile on the face of the earth, save only those in tropical as well as temperate climates that are fertilized year by year by the overflow of streams and the deposit of silt. Frost is not only a disintegrator, but, through this disintegration, and consequent separation of its particles, one from the other, the soil is capable of taking up and holding as plant food the elements that are always found floating in that great reservoir of fertility, the air we breathe.

Through the agency of the oxygen of the air, as before stated, the elements of fertility contained in the soil are set free, and wait to be taken up as plant food through the skill of the farmer. The knowing how to do this is science — that stumbling block sneered at by the ignorant; simply concise art, which any farmer must understand to be successful. So, every successful farmer is in a greater or less degree a scientific farmer; and the more he uses its practical application in his labor, the more successful will he be as a farmer.

Disintegration of the soil, therefore, is the measure of its product as soil. The knowledge how to produce this in the easiest manner is science — an arcana yet unrevealed to many who call themselves good farmers. It is naturally brought about by the air, water and frost, and this is kept intact through the growing season by thorough cultivation.—*Prairie Farmer.*

What to Teach Girls.

Give your daughters a thorough education. Teach them to prepare a nourishing diet. Teach them to wash, to iron, to darn stockings, to sew on buttons, to make their own dresses. Teach them to bake bread, and that a good kitchen lessens the apothecary's account. Teach them that one dollar is a hundred cents, that one only lays up money whose expenses are less than his income, and all grow poor who have to spend more than they receive. Teach them that a calico dress paid for fits better than a silken one unpaid for. Teach them that a full, healthy face displays greater lustre than fifty consumptive beauties. Teach them to wear strong shoes. Teach them to purchase, and see that the account corresponds with the purchase. Teach them that they ruin God's images by wearing strong bodices. Teach them good common sense, self-trust, self-help and industry. Teach them that an honest mechanic in his working dress is a better object of our esteem than a dozen haughty, finely-dressed idlers. Teach them gardening and the pleasures of nature. Teach them, if you can afford it, music, painting and all other arts, but consider them as secondary objects only. Teach them that a walk is more salutary than a ride in a carriage, and that wild flowers are a worthy object of admiration. Teach them to reject with disdain all appearances, and to use only yes or no in good earnest. Teach them that happiness of matrimony depends neither on external appearances nor on wealth, but on the man's character. Have you instructed your daughters in these principles, and have they comprehended these principles? Fearlessly allow them to marry; they will make their way through the world.—*Exchange.*

The Influence of Farmers.

Senator Blane, of Maine, is traveling in the West. At Minneapolis, Minn., he made a speech, in which he said: "The farmers of the republic will control its destiny. Agriculture, commerce and manufactures are the three pursuits that unite a country, but the greatest of these is agriculture, for without its products the spindle cannot turn and the ship will not sail. Agriculture furnishes the conservative element in society, and in the end is the guiding, restraining, controlling force in government. Against storms of popular fury, against frenzied madness that seeks collision with established order, against theories of administration that have drenched other lands in blood, against the spirit of anarchy that would sweep away the landmarks and safeguards of christian society and republican government, the farmers of the United States will stand as the shield and bulwark — themselves the willing subjects of law, and therefore its safest and strongest administers."

THE INDUSTRIALIST.

SATURDAY, OCTOBER 19, 1878.

JNO. A. ANDERSON, Managing Editor.

ASSOCIATE EDITORS, MEMBERS OF THE FACULTY.

Autumn Thoughts.

To me the fall of the year has long been the most pleasant season. It is the time for gathering and storing apples and nuts to be enjoyed on cold winter evenings. The anticipation of these good times coming always inspires us. The whole animal world feeds upon the luxuries that have been all summer in course of preparation. Plenty is on every side.

And not only does plenty abound but beauty, too. The green leaves that in summer gave loveliness to the landscape and shelter from the heat, are now turned to more vivid colors. The hickory and the birch turn yellow and brown; some of the oaks, the shumac, the ampelopsis and the sweet gum, change to purple and crimson; while the sugar maple takes on all colors and shades from red to softest yellow. But these bright colors do not stay long with us. The frost hastens the ripening of the leaves, and every breeze loosens their hold upon the tree so that they come down in showers upon the ground. How appropriate is the word *fall!* But the fall of the leaf is no permanent triumph of death. At the base of each leaf is a bud left on the tree, which will the next spring unfold into a branch or blossom covered with life and beauty. Hence, so far as the leaf is concerned, death has power over it; but the tree lives on, and other leaves, which have been nourished in the bud partly by the old ones, succeed and so perpetuate the charms of the old year. It is not sad to think of death or the falling leaf, when we view it in the light of the coming resurrection.—*Prof. VanDeman.*

IN determining the studies taught, the mode of teaching, and the facilities afforded by the female department of an agricultural college, the controlling purpose must be that of making the girl an intelligent and competent industrialist. Any other attempt, or any unreasonable failure to accomplish this purpose, is a virtual breach of trust, quite as marked and great as would be that of sinking the education of farmers under the fathomless waves of a university course, directly designed for the training of lawyers or preachers. And if it be objected that such a view limits these institutions to the single function of teaching the girls a trade only, we reply: that the female industrialist, being a woman both before and during her industrial work, has an inalienable right to woman's education; that being, to say the least, as much a woman as the one who lives on the labor of others, she has as great a right to an education directly adapted to the performance of industrial work as has the latter to one which is not; that, since all such work requires the use of both mind and body, her education must include both mental and physical training; that, in view of her womanhood, it must regard the strong probability of her marriage, and, therefore, of her need for such mental training as will best prepare her for the mental work of the wife and mother, who, just because she is also an industrialist, not only requires the mental culture of wives who are not, but, in addition, all the knowledge that is really useful in ensuring the greatest profit to her labor; that her education is to be "liberal" as well as "practical," and that the degree of liberalness allowable in her mental training is just as great as that allowable in the training of any other woman.

Exchange.

Man is a creature of desire, and his desires are unlimited. Nature furnishes the materials necessary to satisfy man's desires, and her resources are unlimited. But the products of nature must be transformed by the labor of man before they can be applied to the gratification of his desires. And as his wants are many and his ability limited, man finds it to his advantage to produce but a single article, and exchange this for the articles produced by his neighbors. Thus, the shoemaker might exchange a pair of shoes for a loaf of bread, or the farmer a load of corn for a suit of clothes. This is the lowest stage of exchange, and its inconveniences are soon felt, for if a man desires a thousand articles and produces but one, it will require nine hundred and ninety-nine exchanges to satisfy his desires. If he makes these exchanges by means of barter, he finds it very inconvenient, for the baker may not want a pair of shoes, or the tailor a load of corn. Here we see that barter is unfit for the exchange of a civilized nation.

As a country becomes civilized and the wants of its inhabitants are increased, it is found necessary to have some medium of exchange; something which the shoemaker can sell for bread, or the farmer for clothes; and something which can be taken as a standard for the measure of values. For this purpose money is used. The shoemaker can sell his shoes for money, and sell the money for bread; and if a man wishes to tell how much he is worth, he does not enumerate the various articles which he possesses, but expresses their value in terms of money, that is, dollars and cents, just as we express length in feet and inches. Thus, we say money is the medium of exchange and measure of values, and, if the measure of value, it must have value, for we measure length by length, weight by weight, and value by value. It is also necessary that this be a permanent value, for if a measure constantly changes, it is impossible to make accurate measurements. Thus, as a measure of length we take something having a fixed length, and as a measure for value we must have something which has a constant value, and it must be capable of being infinitely divided, else we could not measure small values. It should be of some substance which is easily recognized, or it might be counterfeited. Its value should be recognized by all civilized nations, or it would be impossible to carry on commerce between nations. Gold and silver answer these requirements better than any other substances. Their values are permanent. Compared with the demand for them, the cost of mining remains relatively about the same. They can be divided without destroying their value, they can easily be distinguished from any inferior substances, and their values are recognized over the civilized world. S.

Crust.

We had chicken pie for dinner the other day. The host asked, as he helped the plates, of which each would take—of the upper crust or the under crust. The almost invariable reply was, "I like the under crust." Well, why was this? Because, although the top crust looked very brown and rich, it was dry. It lacked the juiciness which made the under crust sweeter and more palatable.

This incident caused a thought about the the upper crust and the under crust of society, as the world has it. What constitutes the upper crust, acccording to fashionable ideas? The rich, the showy, the gaudy. He that sits on an office chair; he that carries a slender cane and has a fine "soltaire" (glass) ring. He wears kid gloves; he takes a carriage ride on Sunday, although it may be the tailor has a bill against him for that fine suit he wears. The man of the upper crust may drink a little too much sometimes, but then the world says it can't well be avoided when one gets into a little game of billiards with some of "the boys." If he has no money to speak of, he has style; and so long as he can keep that up he belongs to the upper crust. If he has money and little else, he belongs of course, unless he stingily (?) disowns the company.

And where does that young lady belong? How charming she appears in that new dress, as she walks up street. Perhaps she is in church. Her gay plume is enchanting. See! she smirks and smiles at one with whom she danced six sets the other night. She is of the upper crust. Her gay attire and stylish manners will give her entrance to the charmed circle. It is true she knows that of this partner in the dance there are told some very serious stories as regards his character, and which she knows to be true, but then he is a fine beau. He dances well and whispers sweet words and spends money freely. Alas! she is like the moth that does not fear the flame that lures it.

But there are many men and women of stately mien who hold high heads and speak with graceful condescension to those of more humble birth or position. And why so? Because they belong to the upper crust. We have known young men and women at school, who nearly always had their lessons, who were courteous and earnest in their lives, but somehow they were not kindly received by their more stylish classmates. They belonged to the under crust. They were perhaps poor as regards money, or did not care to spend it except for good reason. The under crust of school sometimes work for their board, make few pretensions, attend few parties during school days, and are at the end of the term, of course, far in advance of those who claim to be above them. A girl who is quiet in her manner, who is not seen making acquaintances with the young men whenever she can, and abhors flirtations, is put down at once as under crust. From this class comes the noble, the true women of the world. They shall shine for ever and ever as stars.

Do not feel badly if you are not counted as upper crust. If you are earnestly engaged in doing your duty, persevere with a good heart. Do not fear of losing your reward. Remember that you have the best of blood in your veins, and that every one else has just as good as yours. It is your own selves that make yourselves. A beautiful face, gay attire and stylish manners, often hide a trifling mind.—*Prof. VanDeman.*

THERE is a town in Ellsworth county called Terra Cotta. Extensive beds of chinaware clay, and glass and fire sand are found at that place, and the last number of the Ellsworth *Reporter* gives an interesting description of these deposits. Over four hundred tons of glass and fire sand have been shipped to the potteries of Kansas and Missouri from the vicinity of Terra Cotta, and a pottery is soon to be established there. Prof. Thomas, of Illinois, pronounces the china-ware clay the best that has ever been discovered in this country. It sells readily at $10 a ton, and is shipped as far east as Ohio. Terra Cotta is seventeen miles from Ellsworth, and six from Brookville.

THE cultivated land of France is held by 5,500,000 owners. Five millions do not own to exceed six acres each. A similar state of things exists in Belgium. But in Ireland, one-fifth of the soil is held by 170 persons.

THE INDUSTRIALIST.

SATURDAY, OCTOBER 19, 1878.

Number of students enrolled this term, 161.

Average temperature for the week, 60°.89; range, 52°; rainfall, .69 of an inch. Frost on Thursday night.

The INDUSTRIALIST was three and a half years old last week. Now is the time to subscribe. No objection to taking gold or silver.

Twenty-four students stood in the first rank during the past month, having reached an average grade of ninety-five or over in their studies.

New students have been enrolled as follows this week: *Jefferson county*—Edward Friend; *Riley*—E. V. Cripps; *Saline*—W. E. Gross; *Wabaunsee*—George C. Keyes.

There was a heavy frost Thursday night, the first one this fall. A climate which can "stand off" a frost until October 17th, isn't a very disagreeable one in which to live.

Prof. Walters is very busy these days superintending the work on his new stone house, which is being erected on his lots west of Bluemont. The students are doing the work.

The articles headed "Exchange" and "What is the Motive," were written by two of our students, and form a part of the rhetorical exercises of the Institution. We shall publish some of these productions each week hereafter.

President Anderson spoke in Manhattan last evening to a house full of our best citizens. His speech was well received. To-day he travels fifty-six miles overland and speaks at Riley Center and Stockdale.

Eddie Kingsbury, a student of the College and a son of Judge Kingsbury, of Burlington, was called home by telegraph last week. His brother was sick and not expected to live. We have learned since that the brother was recovering, and we presume Eddie will return in a few days.

A. A. Stewart will be absent the greater part of next week, attending the annual meeting of the Grand Division of the Sons of Temperance of Kansas. This organization has been invited to meet in Blue Rapids and enjoy the hospitality of her citizens. It is expected that a goodly number of representatives will be present and an interesting session held.

The marriage of Mr. James T. Ritchie to Miss Flora Higinbotham was one of the events of the week. The ceremony at the church was beautiful and impressive, the many and costly presents received were substantial tokens of the esteem of the donors, and the supper at the bride's home was not to be excelled. Mr. Ritchie and wife started for the East Wednesday morning, and will be absent two or three weeks.

Prof. Cooke, the great exposer of so-called spiritualism, gave two entertainments in Manhattan this week. He performed all the prominent feats now practiced by spiritualistic mediums, and afterwards carefully and satisfactorily explained the same. Several of our prominent citizens took a great interest in his work, and all agreed that the Professor faithfully fulfilled his promise to expose all the seeming mysteries connected with it. His entertainments are interesting, amusing and instructive, and we are prepared to recommend them.

The Webster Society met Saturday evening, Oct. 12th. L. A. Salter was appointed Secretary pro tem, and J. H. Harvey Marshal pro tem. Mr. C. M. Records was initiated. The order of debate was postponed, and extemporaneous speaking was heartily engaged in. Mr. Geo. F. Thompson declaimed, and Mr. H. C. Rushmore presented the first number of the semi-monthly *Reporter*. The names of C. H. Messenger and H. E. Farnsworth were proposed for membership, and the name of C. D. Marvin was proposed as an honorary member. Appointments of duties are as follows: Declamation, Mr. C. M. Records; select reading, Wirt S. Myers; editor of *Reporter*, Mr. W. S. Elliot. R.

The following persons stood in the first rank at the last monthly examination, they having attained an average standing of ninety-five or over: *Chautauqua county*—C. M. Shartell; *Cherokee*—Sallie Hutsell and Nannie Scott; *Davis*—W. W. Jaquith; *Johnson*—C. M. Hulett; *Marshall*—Augustine Beacham; *Missouri*—H. F. Coe and Jennie Coe; *Mitchell*—D. S. Leach; *Montgomery*—Lewis A. Salter and Maria E. Sickels; *Osborne*—W. K. Eckman; *Pottawatomie*—W. H. Sikes; *Riley*—A. T. Blain, Mina Hosmer, Grace Parker and Clarence Wood; *Saline*—Ella Coburn; *Shawnee*—Dora Kinsey; *Smith*—Thos. R. Moore; *Vermont*—Chas. Bates; *Wabaunsee*—Ida Noyes and Amy Noyes; *Wilson*—Noble A. Richardson.

We clip from the *Nationalist* the following in regard to Col. Comerford's temperance lectures. He is a very effective speaker, and it is unfortunate that the evenings have been so occupied with other meetings as to prevent him from achieving that success which otherwise would have attended his labors here:

He is an interesting and powerful speaker, but not an elocutionist. There are harsh introductions of excellent sentences, and feeble closings of the same, that make it difficult to closely follow the speaker. But the matter he presents, in word, in argument, in classic phrase, in poetic construction, is faultless. He is an educated man, an accomplished journalist, and, as we said, an interesting and powerful speaker. The logic of the discussion could hardly fall to the ground. Any moderate drinker who listened to the evening's talk, must have seen his heart unfolded, if never before, to his own gaze, and have realized how very dangerous was the course he pursued. How the pitfalls were uncovered before him! How the snares were laid bare, and the terrible ending of the way shown, when "it biteth like a serpent and stingeth like an adder." It was a fearfully life-like picture—framed of those brilliant poets, authors and statesmen, whose sad end is the subject of history, and who were only moderate drinkers at the first.

Monday evening the speaker took up the subject of suicide, and depicted in most touching terms the strange infatuation that lured men out from paths of strict sobriety, through the lanes of moderate drinking, to the tragic end of the unfortunate suicide, who, to escape the pangs of recurrent tremens, rushes into the untried future, where a still more fearful doom awaits him. Col. Comerford, in his career as a journalist, had become cognizant of many cases of suicide which, by the public, were charged to some other than the real cause, but which he knew were the results of drink. The mantle of journalistic charity covers a multitude of these sad scenes.

WHAT IS THE MOTIVE?

It is better to labor for ourselves than to have others labor for us. We all know that labor is irksome, and that the natural tendency of man is to do as little as possible. Still, work we must, but is self alone to be the motive? Many toil day after day, hoarding their earnings in a miserly manner, afraid to spend for fear they might be the losers. They never think of the enjoyment they might have in life, or of the good they might do, by the proper use of their earnings. Their motive is to get rich; "get rich honestly if they can, but get rich." Others investigate the mysteries of nature; but is it for the name, for the benefit of the human race, or have they the same motive in view which actuates Mr. Edison, the renowned inventor. He says that his sole object is to beat the other fellows,—not to make a fortune.

There is no principle in human character that is better calculated to arouse the dormant energies of the mind, to extend the domain of thought, to search out and develop the hidden principles of science, and incite the inventive genius of our nature, than the motive to emulate others. Yet, though knowledge has been increased and the human race elevated from the lowest savage to the highest plane of enlightened society, even the benign influence of the Gospel is diffusing its light into the darkest recesses of the human heart, if the motive be self-gratification no personal good is received. Newton may discover and give to the world the laws of gravitation; Fulton may bridle the mighty powers of steam, and render it useful in commerce and trade; Franklin may tame the electric spark; and Morse and Edison may utilize it in the transmission of thought and sound; but if to "beat the other fellows" and nothing higher be their motive, they derive no benefit but personal gratification. Their names may be honored in the annals of history for their valuable contributions to the world of science and art, but dishonored by Him who judges the motive that stimulated their efforts.

NATIONALIST ITEMS.

Corn husking has commenced in this yicinity.

President Anderson received nine bushels of mail Thursday morning.

Wind, rain, hail, thunder and lightning have been some of the events of the week.

Dr. M. B. Ward has gone to Keokuk, Iowa, to attend a course of medical lectures at the college there.

Sixteen persons were received into full communion at the Methodist Episcopal Church last Sabbath.

Luther Benson, one of the most powerful orators now in the field, will address the citizens of Manhattan and vicinity next Wednesday evening, at the Christian Church. Don't forget the time and place. If you miss this occasion, you will miss the best thing of the season.

The wedding on Tuesday evening brought out all the elite of our city. The Presbyterian Church was crowded an hour before the time appointed for the marriage of Jas. T. Ritchie and Miss Flora Higinbotham. The bridal party came in at the north door and proceeded to the altar. The four grooms were Messrs. Smith, Young, Sawyer and Barner. The bride was attended by Miss Ritchie, her cousins, Misses Esther and Etta Higinbotham, and her sister, Miss Lillie. Rev. Mr. Campbell performed the ceremony in a few beautiful words. The ring was placed upon the hand of the bride, the hands were joined, a brief prayer uttered, and our friend, Flora Higinbotham, who has grown from childhood to a beautiful womanhood in our midst, was no longer Flora Higinbotham, but Mrs. Jas. T. Ritchie. As this man and wife went from the church, we doubt not every heart wished them true happiness.

DIRECTIONS TO APPLICANTS.

TERMS OF ADMISSION.

Candidates for admission must be fourteen years of age, and pass a satisfactory examination in reading; arithmetic, through decimal fractions; and English grammar, to syntax. Classes are started at the beginning of each year in Drill in Arithmetic and Drill in English; and the pupil must have the knowledge above indicated, else he will be unable to retain position if admitted.

Pupils will be received at any time during the year, if able to pass an additional examination upon the subjects studied by the classes which they expect to enter. But they will find it greatly to their advantage to be present at the opening of each term, or as soon thereafter as posssble.

GRADES.

Both the Literary and Industrial recitations are graded daily upon a scale of 100; and an examination of all classes is made at the close of each month. A student not attaining an average grade of sixty is promptly dropped to a lower class, or excluded from the Institution until able to do so. The work of grading is strict and uniform in all the departments, and this process is rigorously used for sifting out incompetent and indolent pupils; thus more than accomplishing all that is designed to be effected by a "high standard of admission." Hence, the student's continuance in the College wholly depends upon his own action.

The course is based upon the determination to make the labor required in the preparation of one industrial and three literary recitations as much as the average student can perfectly perform, in ten hours a day. We design to give the pupil the worth of the time expended at College; and, in order thereto, he must do a full day's work with brain or hand. Only those students who can maintain a standing of ninety in each study will be allowed to take more than the prescribed number of recitations; and no one will be permitted to have less than one industrial and three literary recitations.

RELIGIOUS.

Unless otherwise directed by parents, students are required to attend chapel at 8:30 A. M. on academic days, and divine service once every Sabbath.

EXPENSES.

There are no charges whatever for enrollment, attendance or instruction in the regular courses; nor are there any "contingent fees" for the repair of buildings, for the use of books or apparatus, for diplomas, or the kindred privileges usually grouped under the term "contingent." Male students are furnished instruction, the use of apparatus, instruments or tools, in both the literary and industrial classes marked out for them, without any charge. And the same is true of female students in the regular classes provided for them. Printing and Telegraphy are industrials primarily provided for the education of female students, and male students taking either of these are charged $1 per month for use of instruments.

Instrumental music is a fine art or "accomplishment," rather than a mechanical art. We do not place it among our "industrials" in the same sense, or for the same purpose, that we do those provided for teaching the trades. Accordingly, a fee of $12 per term, or seventy-five cents per week is required from female students for tuition and the use of pianos or organs.

The only charge made for material in either the literary or industrial departments is for the chemicals used by students in laboratory practice, which are furnished at wholesale prices, and amount to but a small sum.

Furnishing an absolutely free education is as much as can be reasonably asked; and the Institution neither boards, clothes, nor supplies the student with text-books. Boarding can be obtained in private families at from $2.75 to $4 per week. Washing costs from seventy-five cents to one dollar per dozen. Text-books, which can be procured in Manhattan, cost from $2 to $5 per term.

No student need expend over $5 per week; and many of our best pupils are living at $1.25 per week. Students desiring to "board themselves" can do so at from $1 to $2 per week. In a club of four young men, renting a house, the average cost to each for the term was $1.11 per week.

LABOR.

Manual labor by the students may be for either of two purposes: First, to acquire skill in a given art; second, to earn money. In the first case, the labor is educational; in the second, it should be paid for by the party benefited.

Educational Labor.—Manual labor in the reciations of the Industrial Departments, like mental labor in those of the Literary Departments, is purely educational and will not be remunerated. While the interest of the student will be held paramount in the direction of this labor, the practice necessary to dexterity will be required.

Remunerated Labor.—When the Institution needs labor on the Farm or elsewhere which is not educational, but simply for its own profit, and which a student is able and willing to perform, it becomes an employer instead of a teacher, and he an employe instead of a scholar. It pays for work, he works for pay. The relation between them is commercial, not educational; and both parties must act upon business principles. Hence, the College furnishes only such employment as its own interests require, and will pay according to the value of the service rendered at from seven to ten cents an hour.

AMOUNT EARNED.

It is impossible to predict how much a given person can earn, since that depends upon what he can do and what work there is to be done. Hence, it is wholly impossible for us to answer the question so often asked: "Do you think I can meet my expenses by work?" Some students make one-half their expenses, some the whole, and exceptional men have made more than expenses. As a rule, a faithful boy skilled in farm work can earn half his expenses on the Farm or in the Nursery. During the year he can ordinarily acquire sufficient skill in the wood or iron shops to enable him to make articles for sale. The whole question is one for his own consideration and decision. We can teach all who come, but cannot absolutely *promise* anything more. Hitherto we have refrained from holding out strong inducements respecting the amount of labor we might have to offer; but in view of the fact that during each of the last three years we have had more to do than the students could perform, we are inclined to give greater and positive encouragement on this point. Any boy who is in dead earnest, who is familiar with farm operations, and who can raise $50 to start with, should be able to carry himself through the four years' course. And certainly this places an education within the reach of every determined boy. As yet we are unable to offer similar advantages to girls, not requiring labor in the College departments which they can perform.

RULES.

1. Behave as a true man or woman should, at all times and in all places.

2. Attend to your own business promptly, thoroughly and courteously; and vigorously let alone that of other people.

3. Penalty: "Leave!"

PUBLICATIONS.

The "Hand-Book," published in 1874, containing a full discussion of the educational question and the aims of the Institution, will be forwarded to any one desiring it.

THE INDUSTRIALIST, a weekly journal edited by the Faculty and published by the Printing Department, contains original and seasonable articles on the Farm, Orchard, Trades, Sciences, and Education. Price, 75 cents a year. Address A. A. Stewart, Manhattan.

CALENDAR.

Fall Term 1878.—Begins Wednesday, September 4th, and closes Wednesday, December 20th.

TO NEW STUDENTS.

Bring the text-books you have been using. On arrival, first arrange for your boarding. A. A. Stewart, Sup't Printing Department, will furnish information, either by letter or on application, concerning boarding places or rooms for rent. Report to the President at 8:30 A. M., immediately after chapel, for enrollment.

For further information apply to Jno. A. Anderson, President, Manhattan, Kansas.

LITERARY SOCIETIES.

ALPHA BETA.—Chartered, December 26th, 1870. Meets in College building every Friday at 2 P. M. Ladies admitted. New students cordially invited to attend. A. T. BLAIN, President.
MISS JENNIE COE, Secretary.

WEBSTER.—Chartered, January, 1871. Meets in Telegraph Hall every Saturday evening. Visitors, especially students, always welcome.
JOHN MANN, President.
W. K. ECKMAN, Secretary.

RAILROAD TIME-TABLE.

KANSAS PACIFIC RAILWAY.

PASSENGER ARRIVES.

No. 2, going East	11:45 A. M.
No. 4, going East	3:47 A. M.
No. 1, going West	4:40 P. M.
No. 3, going West	4:35 A. M.
No. 9 (freight), going West	8:45 A. M.

Nos. 1 and 2 run daily; Nos. 3 and 9 run daily except Monday; No. 4 runs daily except Sunday. Passengers with tickets are carried on No. 9.
GEO. C. WILDER, Agent.

METEOROLOGICAL RECORD.

Condensed by Prof. Failyer from the observations taken at the State Agricultural College, for the week ending October 17th, 1878. Latitude, 39°12'; Longitude, 96°40'; Height, 1,200 feet.

DAY OF WEEK AND MONTH.		Temperature. Max.	Min.	Mean.	Bar. Mean	Hight.	Inches of Rainfall.
Friday	11	64°	40°	51°	28.87		
Saturday	12	77	45	66	28.66		
Sunday	13	89	61	68 .25	28.53		
Monday	14	79	60	67 .75	28.50		.06
Tuesday	15	85	65	77 .75	28.23		.63
Wednesday	16	58	41	50	28.66		
Thursday	17	59	37	45 .50	28.90		

Average temperature for the week, 60°.89.
Range of temperature for the week, 52.°
Rainfall for the week, .69 inches.

KANSAS STATE AGRICULTURAL COLLEGE.

INDUSTRIAL EDUCATION.

The real value of an education to the student depends upon two things: First, the practical worth of the knowledge taught; and, second, the degree in which he makes it his own. Hence, the ability of any institution to give a practical education depends upon the kind and aim of the knowledge it teaches, and upon the thoroughness of the instruction therein. The State Agricultural College was directly endowed by Congress, and is guided by the State, for the specific purpose of furnishing to the industrial classes of Kansas a "practical" education, that is, "one fit for use." As its name indicates, and as the statistics of the industries of the State require, its chief work must be that of giving a useful and usable education to those who will engage in farming; and, therefore, the Farmer's Course must, from the nature of the case, be its main one.

FARMER'S EDUCATION.

Words and figures are merely instruments with which to record ideas. They are not themselves ideas, nor should they be made the chief end of an education. As a wagon is necessary to haul grain, so are they a necessary part of an education; but as the wagon is not the grain, so they are not the knowledge which the farmer converts into money. Hence, the classics and higher mathematics are not taught. But it will be noticed in the following course that so soon as the pupil acquires working skill in the use of the English language as a tool, and of figures and lines as mathematical tools, those arts and sciences which present knowledge that has a cash value to the farmer are taught as rapidly as their importance and thorough acquisition will permit. Studies numbered (1) and (4) in the second, third and fourth years are the spine of the course, to which the others are as ribs and muscle.

FARMER'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Practical Agriculture (advanced.)		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit. Economy, Practical Law.		3. Practical Geometry.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. Practical Agricul. (elementary).		4. English Structure.	
5. Agricul. Chemistry, Meteorology.		5. Organic, Analytical Chemistry.		5. Physics.		5. Adv'd Arithmetic, Book-keeping.	
6. Logic.		6. Practical Surveying.		6. Industrial Drawing.		6. U. S. History, Industrial Drawing.	

WOMAN'S EDUCATION.

Nearly one-half of our students are females, and the Woman's Course is prepared expressly for their liberal and practical education. We have no doubt whatever that practical men and women, who understand what it means and what it seeks to do, will fully endorse it.

WOMAN'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Farm Economy, Special Hygiene.		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit'l Economy, Practical Law.		3. Industrial Drawing.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. English Literature.		4. English Structure.	
5. Phys'c'l Geography, Meteorology.		5. Household Economy.		5. Physics.		5. Adv'd Arith., Book-keeping.	
6. Logic.		6. Household Economy.		6. Industrial Drawing.		6. U. S. History, Industrial Drawing.	

MECHANIC'S EDUCATION.

Because of the adaptedness of the leading course to the wants of the intelligent mechanic, it has been found practically unnecessary to diverge from the Farmer's Course. Additional studies, specially adapted to the mechanic's use, will be furnished in a Post-Graduate's Course.

If it be urged that the distinctively agricultural knowledge taught in the Farmer's Course is not directly valuable to the mechanic, we reply that, admitting the point for the purpose of argument, yet: 1. This knowledge is of more practical value to the mechanic than is the Latin, Greek, or a half dozen other things embraced in the usual course preparatory to the professions; 2. That the great majority of Kansas mechanics will also be more or less engaged in agriculture; 3. That those studies in the course which are directly valuable to the mechanic, together with the shop facilities, offer a better mechanic's education than can be elsewhere found west of the Alleghanies.

INDUSTRIAL DEPARTMENTS.

Having knowledge in the head is one thing; ability to use it with the tongue, fingers or feet is quite another thing. Both are vital to success in practical life. A man might thoroughly understand the theoretical principles of carpentry, and yet, not having used the tools, be wholly unable to earn carpenter's wages. So in all other vocations. Accordingly, instruction is given in the following well-equipped Industrial Departments, and every student is required to recite in some one of them, as selected by the pupil or parent:

FOR MALE STUDENTS.	FOR FEMALE STUDENTS.
The Farm.	Dress-making.
The Nursery.	Printing.
Carpentry.	Telegraphy.
Cabinet-making.	Scroll-sawing.
Turning.	Carving.
Wagon-making.	Engraving.
Painting.	Photography.
Blacksmithing.	Instrumental Music.

Each of these departments is conducted exactly as in daily life, and aims to give precisely the drill received by an apprentice. No charge is made, either for tuition or material, from male students taking the Industrials provided for them; nor from female students taking the ones provided for them, except in the Department of Instrumental Music. Male students taking either Printing or Telegraphy are charged $1 per month for the use of material and instruments.

DEPARTMENTS OF INSTRUCTION.

DEPARTMENT OF AGRICULTURE.

PRACTICAL AGRICULTURE.

Second Year:—General principles of breeding; history and characteristics of breeds; adaptation of different breeds for special purposes and localities; implements of simple tillage; mechanical principles involved in their construction; action of the plow upon soil and subsoil; principles of draught; influence of different adjustments upon draught; use of the dynamometer; value of hoed crops in a system of husbandry; the cultivation of corn and roots; soils that need drainage; how to lay out a system of drains; house drainage; sewerage.

Fourth Year: General view of agriculture, ancient and modern; agricultural progress of the last century; relative advantages of mixed husbandry and special farming; the selection and arrangement of the farm with reference to the system to be pursued; rotation of crops; general advantages of a rotation; the best rotation with reference to disposition of labor, production of manure, and extermination of weeds; pasturage and production of grain and forage crops; manures, how best housed and applied; composting manures; commercial fertilizers; systems of feeding; stall feeding; steaming food; soiling; experiments in feeding; farm buildings; farm-houses; barns.

FARM ECONOMY.

Woman's Course, Fourth Year: Dairy products as human food; influences affecting character of milk; manufacture of condensed milk; the factory system and household plan of cheese-making; treatment of rennet; general process of cheese manufacture; subsequent treatment of cheese; butter-making; creameries; "deep" and "shallow" setting systems; general process of butter-making; packing and preserving butter.

DEPARTMENT OF BOTANY AND PRACTICAL HORTICULTURE.

This department embraces a course of instruction in the elements of botany, structural and systematic, with a constant attention to the practical application of botany to the farm, orchard, garden, nursery and forest; also a course of lectures on Landscape Gardening. The instruction is mainly given by lectures, accompanied by regular practical drill in all the work of the fruit, vegetable and flower gardens, nursery, orchard, vineyard and ornamental grounds.

The lectures in Practical Horticulture embrace the following and kindred subjects: The relation of atmospheric motion, moisture and temperature to horticulture; seeds, the means of collecting and preserving; propagation, by seeds, cuttings, layers, suckers, grafting, budding; care of young plants; improvement of varieties; management of commercial and farm nursery; modes of pruning; the orchard; fruit suitable for orchard and garden culture; the flower, vegetable and fruit garden; importance and mode of forest culture; shelter belts and their influence; weeds and useful plants; noting the species of trees worthy of culture, either for profit or ornament.

LANDSCAPE GARDENING.

The lectures on Landscape Gardening not only unfold the accepted principles of the art, but at the same time give special attention to such applications of the art as may be made universally available in laying out and improvement of farms and the homes of the people. These lectures are accompanied by a practical drill in the work of laying out and plotting grounds topographically.

CHEMICAL DEPARTMENT.

PHYSICS.

This includes a full consideration of the laws of mechanics, of liquids, gases and vapors, weights and measures, and specific gravity, followed by experimental study in the Physical Laboratory of the laws of heat, light, with spectrum analysis, electricity and magnetism, and the relation of these forces to plant and animal life. Text-book, Ganot.

INORGANIC CHEMISTRY.

This course is opened with a careful study of chemical forces and the laws governing chemical combination. The elements, with their compounds, are next considered in succession as to their history, properties, manufacture, and especially with regard to their uses on the farm and in the arts. These lectures are accompanied by an extended course of laboratory practice in which each student performs every experiment with his own hands. Text-book, Eliot & Storer.

ORGANIC CHEMISTRY.

This comprises a thorough study of the chemistry of the organic compounds, the composition of plants and of the various compounds derived from them. Constantly accompanied by laboratory practice.

CHEMICAL ANALYSIS.

In this course each student is furnished his stand in the Qualitative Laboratory, completely furnished with apparatus and chemicals for his own use. He here performs analyses of farm soils, plant ash, commercial manures, ores, mineral waters, commercial compounds, etc. After completing this course, he enters, if he desires, the Quantitative Laboratory, where he pursues a full course in quantitative analysis. Text-book, Kedzie's Manual.

AGRICULTURAL CHEMISTRY.

This includes a thorough consideration of the application of chemical principles to the economy of the farm; the origin and formation of soils; the classification and composition of soils; the analysis of soils and their adaptation to purposes of production; the composition and use of manures; composting; chemistry of farm operations, such as plowing, fallowing, draining, etc. Text-book, Johnson's "How Crops Feed."

METEOROLOGY.

Embracing the composition of the atmosphere; atmospheric pressure; temperature and humidity; laws of storms; rain, snow and atmospheric electricity. A full course in meteorological observations is taken under direction of the Signal Service. Text-book, Loomis' Meteorology.

MINERALOGY.

This includes the study of the laws of crystallography, with the properties, forms and uses of the principal minerals of the United States. Blow-pipe analysis forms a very important part of the course, each student being required to name and identify a large series of minerals. Text-book, Dana's Mineralogy.

HOUSEHOLD CHEMISTRY.

A course of lectures on this subject is yearly delivered to a class of young ladies. The course embraces the chemistry of cooking; the composition of food; bread; tea, chocolate and coffee; butter and milk; ripening and preservation of fruits, etc.

SPECIAL COURSES

Are constantly in progress in Assaying, Pharmaceutical Chemistry and Photography.

ENGLISH LANGUAGE.

Words are simply tools used to express ideas; and, since the vast majority of our communications are made by the employment of spoken or written words, skill in using them is as profitable to the industrialist as dexterity with the needle is profitable to the seamstress. The direct aim of the course is to make the student skillful and intelligent in handling the machinery called language, just as an engineer handles a locomotive; and no drill will be omitted, or effort spared, to gain this end. Apart from the course itself, which is far more practical and complete than that usually found in literary colleges, the constant attention given this subject by all the departments, and especially the practice required in the printing classes, affords superior advantages to the student.

DRILL IN ENGLISH.

"As grammar was made after language, so ought it to be taught after language."—*Herbert Spencer.*

Drill in English embraces the following topics:

Sounds of the language; drill in producing the vocal, sub-vocal and aspirate elements with accuracy, distinctness and volume; vowels, consonants.

Letters: Form; power; rules for spelling, drill.

Words: Signification, properties, modifications, variations, relation and dependence.

Sentences: Drill in statement of ideas; description, clearness, terseness, vigor; business letters, discussion; capitalization; syllabication; punctuation; construction and analysis of sentences; elements, uses and names; criticism of compositions printed as written; proof reading; grammatical construction; superfluous words and clauses; drill in reading, speaking and penmanship.

Text-books: Webster's Academic Dictionary; Lee & Hadley's Advanced Lessons in Language.

Pupils deficient in spelling, etc., should enter the printing class, the printing-office being the work-shop of language.

STRUCTURE OF ENGLISH.

ELEMENTS OF WORDS.—The end aimed at in this study is to learn everything about words which will aid in their effective use. Among the topics included are:

Roots: What are they; their origin; their force and value as an element of language; the manner of their growth into different parts of speech.

Stems: Their derivation; their offices and properties; their relation to other parts of words.

Prefixes and Suffixes: The several sources whence derived; the relation of their force or significance to those sources; explanation of the laws and principles governing their use along with stems.

Compounds: Their value; their properties and uses; the laws governing their formation.

Synonyms: Definitions; causes of their abundance in English; the principles to be observed in choosing among them, to express a thought.

Criticism: This constitutes a prominent part of the exercises of the pupil through his whole course in the study of English. It not only diversifies and enlivens the class-room exercise, but reduces to practice the principles of the structure of the language. By this means, the student acquires not only a knowledge of English, but readiness and accuracy in speaking or writing it. The exercises in criticism embrace not only examination of selected matter, but original composition.

ELEMENTS OF SENTENCES.—The purpose in view in studying this subject is not to traverse the ground gone over in the study of grammar, but to fix in the mind of the student a clear understanding and remembrance of names, the properties and offices of the several classes of words entering into an English sentence, by showing him the reason of things; to make more simple, as well as interesting and practically useful, a study otherwise "dry and unprofitable" in many cases, by explaining the reason of the verbal forms and changes, the rules and maxims he is to remember and observe in his use of language. In the same manner he is conducted through a study of the mutual relations and dependencies of the several elements making up a sentence.

MATHEMATICAL DEPARTMENT.

Figures and lines, like words, are only instruments with which to convey ideas, or perform operations that cannot be easily done without them. The arithmetical principles used in business are few and simple; but accuracy and rapidity in computation are only gained by practice. College graduates often fail to retain clerkships, not because they do not know *why* given operations are performed, but because they can neither add, multiply or divide with that habitual correctness which renders their work reliable.

DRILL IN ARITHMETIC.

The chief design of this study is to make the student expert in the use of numbers, as employed by the industrialist for profit. The occupation of a successful farmer demands the application of every principle of practical arithmetic, and is taken as a starting point, rather than that of an abstract system. Beginning with a simple cash account, book-keeping is gradually developed to the full extent of its real utility. The areas of fields, expense of crops, construction of houses, sales of produce, and investment of capital, involve all the fundamental operations, and those of profit and loss, commission, taxes, insurance, exchange and stocks. Following this line, the student, so far from hammering away at "pure" science draws from the mathematical store-house what he needs, and sees why he needs it. Accuracy of calculation and posting, rather than a *mere* comprehension of the principles, is aimed at. Besides the recitation-room drill in business forms, practice in the field is also given. Estimating the number of cords in a pile of wood said to be 100x4x4 feet is one thing; measuring a pile of wood through which any number of cats may be harmlessly thrown, and in which four-feet sticks are the exception, is quite another and more difficult thing.

ARITHMETIC AND BOOK-KEEPING

Is a continuation of the above, having the same purpose and adopting such methods as the necessities of the class indicate. Thorough instruction in the principles and forms of business law is given. It will be seen that this method of teaching book-keeping, besides ensuring arithmetical practice, develops practical skill in that important art.

ALGEBRA.

Algebra is included in the course as a preparation for the study of Surveying.

DRAWING.

The practical value of Industrial Drawing can hardly be overestimated, first, because its study is the best drill for the development of the perceptive faculties, which are the ones most employed in daily life; and, second, because the working classes make a far greater use of lines than they do of figures. A farmer follows a line when laying a straight furrow; the carpenter uses the square and rule twenty times as often as he does figures; and a woman in cutting a pattern, or deciding that one bonnet is prettier than another, does so by the line or "form." So that either in its direct application, or in the exercise of that taste which comes from skill in using lines, this branch of mathematics is quite as important as a means of "mental discipline" as is the branch of computation, and is of far greater daily use. The admiral system of Prof. Walter Smith, Art Director of Massachusetts, is thoroughly followed through the grades of Free-hand, Geometrical, Object, Model, Perspective, Mechanical and Topographical Drawing, during the terms indicated by the Course of Study. In addition, constant practice in the application of lines to metal and wood is furnished in the Blacksmith, Carpenter, Turning, Scroll-sawing, Carving, Engraving and Printing shops, and to fabrics in the Sewing Department.

PRACTICAL GEOMETRY.

Not one farmer in a thousand ever uses the transit in surveying his land, the testimony of the county surveyor being decisive in court; but every farmer makes countless applications of lines and angles in laying off fields, roads, gardens, planning houses, determining levels, etc. The object of Practical Geometry is to teach the properties and uses of angles, and to make the student skillful in the application of lines to the field by the use of such simple instruments as are always within reach, or within his ability to construct; and accurate in the transferring of plans to the grounds, board or block.

PRACTICAL SURVEYING.

The drill in the use of figures and lines given by the mathematical course as above indicated, renders the mastery of surveying an easy task. There is no calculation made or formula used by the working engineer which cannot be readily understood and performed by a skillful arithmetician after proper instruction. The hand-book of the engineer is accordingly supplemented with such special guidance as is found necessary for a full comprehension of the mathematical principles and their applications; and extended field practice is required in the use of the compass, level, transit and theodlite.

STUDIES SPECIAL TO WOMAN.

Besides the studies already indicated, attention is called to the following:

SPECIAL HYGIENE.

As shown in the course, one term is devoted to the study of Physiology, from the text-book of Dr. J. C. Dalton. This is followed in the fourth year by a course of lectures to young ladies by Mrs. Cripps on the subject of Hygiene, embracing such instruction in hygienic matters as are valuable to woman.

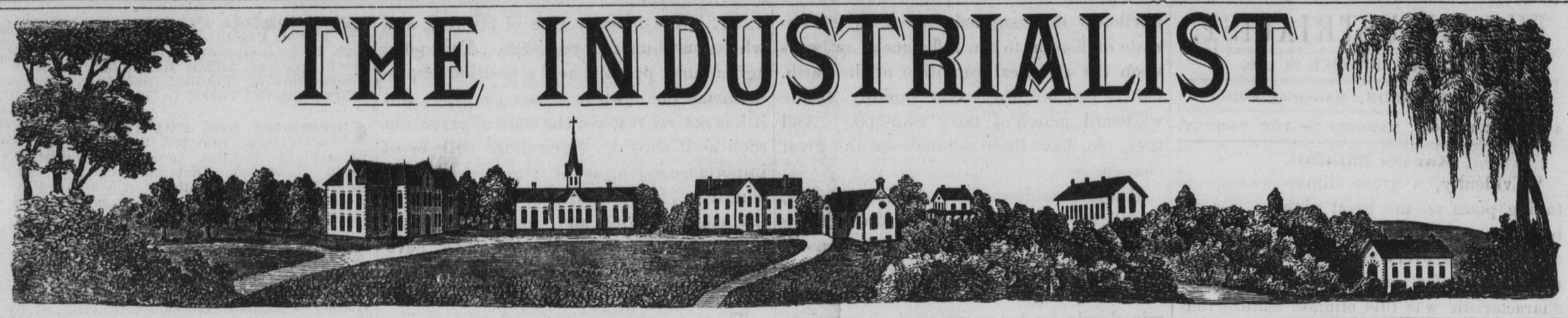
FARM ECONOMY considers those affairs of the farm which usually come under the supervision of the farmer's wife or daughter, and which are not included in "gardening" or "household economy;" such as butter and cheese-making, dairy management, etc. A course of lectures is delivered by the Professor of Practical Agriculture. See heading, "Farm Economy."

GARDENING is included in Practical Horticulture. See heading, "Landscape Gardening."

HOUSEHOLD CHEMISTRY. See heading, "Household Chemistry."

HOUSEHOLD ECONOMY

Follows Household Chemistry and consists of lectures by Mrs. Cripps in the art of house-keeping, embracing cookery, domestic management, and kindred topics. Many elderly gentlemen sufficiently know, and more young gentlemen will duly discover, that systematic knowledge of how cooking ought to be done is luminously different from the ability to do it. Instruction without practice can effect but little. Accordingly a kitchen laboratory has been completely furnished, and affords every facility for drill in the art of cooking. This drill chiefly differs from that of a kitchen in the respect that after a girl has learned to wash dishes or pare pototoes she is not kept everlastingly at either. After full trial we have found it just as feasible to give this practice, with profit and pleasure to the pupil, as it is to give laboratory practice in chemistry—and no more expensive.



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Address A. A. STEWART, Manhattan, Kas.

INDUSTRIAL EDUCATION.

Not the least of the things of which Kansas has a right to be proud is its magnificent educational system. At the start a wise and vigorous policy was adopted for the education of its youth; and ever since, whether in war or peace, poverty or plenty, the State has steadily developed and carefully fostered its various educational agencies. In addition to its munificent endowment of the public schools, it has provided higher institutions for three distinct kinds of instruction, namely, normal schools for the special training of public school teachers; a university for the education of those proposing to enter the professions of law, medicine or theology; and an agricultural college for the practical education of those who will engage in any of the "industrial professions or pursuits," as distinguished from the "learned professions." The relative demand for the three forms of education is indicated by the proportion in which the citizens of Kansas follow these vocations, as shown by the last United States census. Of every one hundred persons engaged in a vocation by which money is gained, the ratios were as follows:

Normal education:		
Teachers	1.13	1.13
Professional education:		
Ministers	0.43	
Lawyers	0.55	
Doctors	0.73	1.71
Industrial education:		
In agriculture	59.13	
In manufacturing and mechanical	14.63	
In personal service	13.89	
In trade and transportation	9.51	97.16
		100.00

AGRICULTURAL COLLEGE.

Recognizing the need for an education which should especially prepare the rising generations for an intelligent and successful practice of those vocations which are followed by ninety-seven out of each hundred of its citizens, the first institution endowed and put in operation by the State was its Agricultural College, so named because of the fact that agriculture is, both numerically and actually, the chief of these vocations. The title, "Agricultural" College, is apt to mislead those who are not familiar with the above fact, and also with the further fact that the acts of both Congress and of Kansas provide for an "industrial," as distinguished from a "professional" education.

ENDOWMENT.

The endowment received from the United States Government consisted of 81,601 acres of choice land, all of which had been sold at date of last report, except 31,461 acres now on the market. The proceeds from the sale of lands are invested in school bonds, and the securities in hand amounted to $238,101.28 by last report. The annual income from this endowment is about $20,000, out of which all expenses of instruction are paid. The only aid received from the State is for the erection of buildings, in accordance with the conditions of the congressional grant. This is the only one of the State's institutions which is not dependent upon the tax-payer for its maintenance.

LOCATION.

It is situated one mile from Manhattan, Riley county, one hundred and twenty miles west of the Missouri River, in the heart of the finest agricultural State in America. The Kansas Pacific Railway, with its connecting lines, gives speedy communication with every quarter.

COURSE OF STUDY.

The course of study is shaped with direct reference to giving an industrial as distinct from a professional education. It makes the pupil intelligent and expert in the use of the English language; in the use of numbers as employed by the farmer, book-keeper and engineer; and in the use of lines as employed by the carpenter, painter and architect. Words, figures and lines are tools which all men use. It then gives thorough instruction and laboratorial or field drill in the following sciences as essentially useful to an intelligent and successful farmer: Physiology, Practical Agriculture, Natural Philosophy, Botany, Entomology, Practical Horticulture, Landscape Gardening, Inorganic Chemistry, Organic and Analytical Chemistry, Surveying, Geology, Mineralogy, Zoology, Meteorology, Agricultural Chemistry, Political Economy, Practical Law and Logic. It has an equally practical and effective course for the education of woman as a woman, instead of as a man, and as a worker instead of as a butterfly. Then, it has a well-stocked farm and nursery, and well-equipped shops, for giving boys practice in farm and nursery work, and in wood and iron work, and for giving girls drill in dress-making, printing, telegraphy, carving, engraving and music.

Emulation.

One of the most vital of college questions and, indeed, of all education, involving as it does the entire system of honors, standings, etc., is that concerning the nature and effect of emulation. Whether it be a praiseworthy feeling, how it is distinguished from rivalry and envy, and how the one may be awakened without the others, are still vexed questions among college authorities as well as psychologists. The primal source of emulation is the desire of power and the desire of knowledge. Emulation in pursuit of knowledge is all that interests us at present, but it is evident that the pursuit of knowledge, at least during its first stages, depends upon the desire of power to a great extent, while the pure desire of knowledge for its own sake is, as yet, latent or comprised in mere curiosity. Our ideas of power and knowledge, or, at least, the ideals at which we aim, are naturally relative. Among all peoples and grades of life the idea of power or knowledge we find to be dependent upon the amount possessed by one's associates. The child's ideals and aspirations are not to surpass Napoleon or Bacon, but to surpass its companions. The savage is content to be superior to those of his own people, and civilized man cannot be said to emulate God in his omniscience.

This relativeness being granted, we easily see how the spirit of emulation arises. If the natural and necessary development of men were limited to a single being, he would advance rapidly toward his ideal, but the ideal itself would advance little or none. If however, his fellows advanced at the same rate as he himself, and what was formerly comparative knowledge or power becomes comparative ignorance or weakness, his ideals would be elevated but he would attain no nearer to them. It is only when he develops more rapidly than his fellows that he can attain near to his ever-advancing ideals, though he may pass and repass what had formerly been his ideals. This reasoning, we find, is supported by daily observation. We know that a mind, associated with advancing minds on something like its own level, is spurred on to much more strenuous efforts than when its associations are entirely with minds of much inferior caste. He must surpass his companions in order to advance towards his ideals of power and knowledge. From this reason we find men continually comparing themselves to others to determine their own advance. This is true emulation — the desire to be superior to others in order to progress toward one's ideals, the desire to surpass others not for the sake of surpassing them but because it is necessary to reaching their notion of what they can and should be.

Emulation cannot be content with outstripping others unless it knows that that outstripping is a real, not a seeming advance. Here lies the fundamental difference between it and envy. Envy aims at fame, popular applause, influence and the like. All these may be obtained by an appearance or exhibition of superiority, so envy is content with such appearance, while emulation is content only with the consciousness of superiority. Envy is satisfied if it drag others from their higher levels, emulation is not until it attains those levels. The one is grounded in selfishness, the other in self-love.

The application of these principles to college education is evident. Anything which appeals to the student's desire for fame or popular applause, rather than his pure desire of superiority, awakens envy and rivalry, not emulation. That which can afford him a means of comparison with others and awaken in the least degree his love of praise and ostentation is certainly the most to be desired. It is not only to be desired for formation of true characters, but for practical success as well. The student who strives because of the desire of conscious superiority acts from an influence which will attend him everywhere and at all times. But he who works for the immediate purpose of securing honor, not only strikes the death-blow to all that is manly in character, but is stimulated by influences which dwindle away in the actual warfare of life and leave him without energy and without purpose. — *College Transcript, Delaware, Ohio.*

A Good Education.

"To read the English language well, to write with dispatch a neat, legible hand, and be master of the first four rules of arithmetic, so as to dispose at once, with accuracy, of every question of figures which comes up in practice. I call this a good education. And if you add the ability to write pure, grammatical English, I regard it as an excellent education. These are the tools. You can do much with them, but you are hopeless without them. They are the foundation; and you cannot hope to acquire a good education unless you begin with these, and not with flashy attainments, a little geology, and other ologies and osophies, which are ostentatious rubbish."

The above definition of a good, common school education was given by the late Edward Everett, one of the ripest scholars in the United States, and every practical, business man will admit that this brief paragraph expresses the exact truth. The public school system of the whole country is attempting too much altogether for the public good. Enthusiasts and school-men have been carried away with the high-sounding theory of fitting every boy and girl for the professorship of a college. In their zeal for educating the masses, the fact has been overlooked that where there are a hundred fitted by natural abilities to become professors, there are other tens of thousands who have neither the desire, natural capacity or opportunity to be students or professional teachers, but have the ability to acquire, and the right to receive, a plain, useful education. Losing sight of this fundamental truth has cost, and is costing, the taxpayers of the country millions of money yearly which is virtually wasted.

There is a great deal of the elaborate trumpery, playing an active part in public school education throughout the country, which will have to be laid away in the dusty lumber-rooms where so much of kingcraft, priestcraft and other kindred humbugs of the past have been stored. The sums of the people's money which are yearly wasted in cramming public schools with text-books is appalling. The tax for school purposes in many of the old States, which are not fortunate in having land endowments, is 25 to 33 per cent of their entire tax. An educational tax is one of the most valuable investments that can be made, but a waste of resources on any object however worthy cannot be defended.

The education demanded by every boy and girl from the State is comprised in the brief sentence above quoted, by Edward Everett, and that should be thorough. If extra branches are desired, let those aspiring youths seek them in the private academy, seminary or college. The State has performed its duty as an educator when it has fitted every child between the ages of six and fifteen years with those branches which enable him to prosecute successfully the numerous occupations which nineteen-twentieths of the people who earn their bread are engaged in.—*Prairie Farmer.*

LET your word be your bond. A good name is a fortune.

The Farm a Means of Education.

It is not a figure but a plain fact that a man is educated by his daily calling. Indirectly, labor ministers to the wise man's intellectual, moral and spiritual instruction, just as it gives him directly his daily food. Under its legitimate influence his frame acquires its due proportion and proper strength. To speak more particularly, the work of a farmer, for example, is a school of mental discipline. He must watch the elements, understand the nature of the soil he tills, the character and habits of the plants he rears, the character and disposition of each animal that serves as living instruments. Each day makes large claims on him for knowledge and sound judgement. He is to apply good sense to the soil. Now these demands tend to foster the habits of observing and, judging justly, to increase thought and elevate man. The education men derive from their trade is so striking that craftsmen can express almost any truth, be it never so deep and high, in technical terms of their calling. The humblest business may develop the noblest power of thinking. So a trade may be to a man what the school and college are to a scholar.

The wise man learns more from his corn and cattle, than the stupid pedant from all the folios of the Vatican. The habit of thinking thus acquired is of more value than the greatest number of thoughts learned by rote and labeled for use.— *Exchange.*

Winter Lettuce.

Lettuce is one of the few vegetables that one might have the whole year — and we think it is eaten with a better relish in the winter and early spring than at any other time. The system seems then to demand variety and change — when the cold is relaxing, the days lengthening, and the warmth increasing. Every family that has a little garden spot can enjoy the luxury with very little trouble. All that is necessary is to build a frame of coarse boards, cover it with a closely fitting glass sash, and place it in a sunny spot — somewhat protected — in this plant the lettuce sets, about six inches apart, in good ground and keep them properly watered. They will grow all winter, and in the early spring will form beautiful large heads to encourage the appetite and grace the table. The earlier in the autumn this operation is begun the better.

The Brown Dutch and Hammersmith Hardy Green are the best varieties for winter use. The seeds should be sown in September, and are so hardy that if planted in a sheltered situation and protected by a loose covering of straw and evergreen boughs, they will stand the winter well. If transplanted in a cold frame, as suggested above, they will do better and produce more tender, delicate and larger heads.—*Exchange.*

SILK culture promises to become a leading industry in the Southern States. Various trials have shown that the section is as well adapted to this enterprise as the countries in which it is most successful. Three years ago Mr. Samuel Lowery, a colored lawyer of Huntsville, Ala., commenced the raising of silkworms, which proved very healthy. Mr. Lowery has now a number of mulberry trees planted, and will have for sale this spring from 4,000,000 to 5,000,000 of eggs, worth about $6.50 an ounce, or $1 per 100.

WE add two teaspoonfuls of powdered saltpetre and two tablespoonfuls of granulated sugar to ten pounds of good, well-worked butter, when we put it away in the fall to keep all winter. It will keep good and sweet without these additions so long as the weather remains cool, but it does not keep well after it gets warm in the spring.

THE INDUSTRIALIST.

SATURDAY, OCTOBER 26, 1878.

JNO. A. ANDERSON, Managing Editor.

ASSOCIATE EDITORS, MEMBERS OF THE FACULTY.

Kansas Rainfall.

"Evidently, a great climate change is taking place on the great plains. For fifteen years after the settlement of Kansas and Nebraska, every year the crops suffered more or less for want of rain. Indeed, so characteristic was this climate feature that the sobriquet of 'drouthy Kansas' was applied to the region. For the last eight or nine years the crops have not suffered from want of rain but often from an excess of it. * * * * But the most significant fact is that the commencement of this change is synchronous with the extension of telegraph and railroad lines to and across the Rocky mountains."

The above is clipped from an article in the *Globe-Democrat*. Such articles frequently go the rounds of the press. In the face of all these assertions, it is interesting to study meteorological records. In the following table is given the amount of rain and melted snow for each year since 1859, 1865 and 1866 excepted; the rainfall for the growing and maturing months, May, June, July and August; the total for the four months and for July and August. The years 1865 and 1866 are omitted, as the seconds are incomplete :

Yr's	*Total f'r Year.*	*May*	*June*	*July*	*Aug.*	*Total*	*Total for two Mo's.*
1859	36.23	9.42	3.57	4.99	6.84	24.82	11.83
1860	13.77	1.13	2.69	2.09	3.00	8.91	5.09
1861	34.56	3.76	8.20	6.08	1.39	19.43	7.47
1862	26.20	3.18	1.37	3.83	2.85	11.23	6.68
1863	39.43	3.13	5.95	4.53	6.21	19.82	10.74
1864	20.25	2.29	2.06	3.02	1.84	9.21	4.86
1867	26.50	3.59	5.65	5.42	.70	15.36	6.12
1868	24.12	1.38	3.46	4.70	.00	9.54	4.70
1869	28.22	1.12	8.85	6.27	2.43	18.67	9.70
1870	21.19	.00	.79	2.98	5.21	8.98	8.19
1871	29.76	5.07	2.05	5.03	4.25	16.70	9.28
1872	35.78	6.81	1.73	8.92	5.32	22.78	14.24
1873	32.89	8.54	7.78	2.84	1.64	20.80	4.48
1874	18.66	2.98	4.31	.18	.25	7.72	.43
1875	17.96	2.46	2.06	3.23	1.40	9.15	4.63
1876	43.34	5.73	4.60	5.65	8.76	24.74	14.41
1877	43.79	7.90	6.76	4.16	2.78	21.60	7.94
1878		4.06	5.02	12.71	2.66	24.45	15.37

The heaviest annual rainfall was in 1877, 43.79 inches. The least in 1860, 13.77 inches. The heaviest for the four months was that for 1859, 24.82 inches. The least in 1874, 7.72 inches. The heaviest for July and August, was in the year of 1878, 15.37 inches. The least in 1874, .43 inches. During the years 1876, 1877 and 1878 an unprecedented amount of rain fell. The nearest approach to these years was in 1863. The next in 1859, the year preceding the great drought. In this year, 1859, more rain fell in the growing season than for the same period during either of the other seventeen years.

As will be seen excessively wet periods alternate with dry ones. It is especially interesting to note that more rain fell in the year 1874, our excessively dry summer, than fell in 1875, the year that Kansas competed successfullv with all her sister States. And it is significant that while in 1875 there were 4.63 inches of rain in the months of July and August, there were but .43 inches of rain during the same period in 1874. Those years which were disastrous to the farmer invariably show a light rain-fall in the four months named, notwithstanding, that, for the whole year, may be an average. In some fruitful year, the total rainfall was light, but these four months were bountifully supplied. Hence conclusions drawn from comparing totals, year to year, are often erroneous, It seems, if there is any difference, that the rainfall for July and August, the period when most of our crops are filling and maturing, is the most important factor.

The author of the quotation given above, attributes the assumed change in the climate of Kansas to the influence of railways upon the electrical condition of the earth. Others can tell the exact rapidity of the westward march of the "rain-belt." And they, too, have their rationales of the great change.

Before considering any of these theories, it will be well to first be assured that there has been an actual change. The seasons of Kansas are so seemingly fickle that the laws governing its climatology can be determined only by long-continued observations of its various phenomena. Our records extend over much too short a period to afford a solution of the problem, but they furnish many interesting and instructive facts. Prominently among which is the practical constancy of the rainfall. The years of greatest precipitation are, 1859, 1863, 1872, 1876 and 1877, when it was, respectively, 36.23, 39.43, 35.78, 43.34 and 43.79 inches. The dry years are 1860, 1864, 1870, 1874, and 1875, when the rainfall was, 13.77, 20.25, 21.19, 18.66 and 17.96 inches, respectively. The average for these ten years differs but the fraction of an inch from the average annual rainfall for the whole time. These figures certainly do not indicate any great climatic change.

While honoring the fair name of our State, it is possible to believe that she may have less propitious seasons than those just past. But with much less rain than has fallen in the last few years, bountiful harvests may be gathered.

This article was not intended as an attempt to solve the problem presented by the meteorological phenomena of our State. The main object has been to present the data, letting each one compare for himself. Had space permitted, it would have been desirable to present thermometrical and barometrical tables, direction of winds, etc. But from what is given, it is hoped that the difficulties to be encountered may be appreciated and that conclusions will not be formed so hastily.—*G. H. Failyer.*

Agriculture as an Industrial Art.

The industrial arts are necessary arts. What the industrial arts are, or why they are necessary, are questions that we find difficult to answer. An industrial art employs knowledge, labor and capital. Labor is necessary for the welfare of men, but all labor is not included in "the industrial arts." To become great, good, wise, and powerful a man must labor. Of the industrial arts which will you choose? Will you become a mechanic, merchant, druggist, teacher or a farmer? All can not be merchants, some must be teachers. There is no one except a parent who is capable of exerting so great an influence as a teacher. There is no one more absolutely independent than the farmer.

Men ask the reason for the slow progress of agriculture. We answer, the lack of educational facilities. Not until the year 1819 was there an agricultural journal published in America. We had no agricultural exhibitions, no agricultural colleges; the youth of our land were instructed in the narrow routine of ignorance and superstition, as were their ancestors a century before. Need we wonder at the progress made when we learn that a century ago if a farmer ventured upon experiments, if he did not plant so many acres of corn, and that too in the dark of the moon, if he did not plow as deep and with an equal number of oxen, if he he did not wear the same home-spun dress and adopt the same religious views and prejudices, as did his grandfather, he was shunned by all and was regarded as visionary. This is not "drawn from the imagination"; it is literally true of farming, as a whole, one hundred years ago. Yet to-day agricultural pursuits held a position of preeminence unknown in former periods. But it has not yet reached the state of perfection such as it should. Agriculture will be of importance so long as the farmer remains uneducated. It is an imperative law of society that educated mind and labor will take its place above uneducated. We must have educated laborers and men of character and will.

There is an equality in all labor. The farmers pay for all, and must receive attention from all. We do not mean by this that he has been entirely neglected, but we do mean that agriculture does not receive that attention from our legislators that it should. Yet, in spite of all this, we have seen agriculture improving, and those who live by it slowly but surely rising in dignity and self-respect, and in the esteem of mankind.

Agriculture must advance, and higher developments in this art will go hand in hand with advancements made in the other arts, and with an increase of population, knowledge and capital. And when it shall receive that attention and appreciation to which its importance and grandeur entitles it, when we shall learn to look upon labor as something necessary and not to be despised, as honorable and to be honored, when we recognize how dependent for our sustenance we are upon agriculture, then agriculture will stand forth as the pre-eminent industry of the world, and to be a farmer will be honorable. R.

Water for Domestic Uses.

The question of pure water-supply has been taken up for discussion by the London Society of Arts, and circulars have been sent out to civil engineers, sanitary officers, and other persons whose calling would appear to make them familiar with the conditions of the problem, inviting from them suggestions and plans for insuring to the whole population of England a sufficiency of pure water for domestic uses. A "Congress," too, has met in London, at which a number of papers, prepared by some of the most competent engineers and sanitarians, were read. In one of these papers, written by Mr. Samuel C. Homersham, the qualities of water fit for domestic uses are stated as follows: 1. Such water should be wholesome, free from animalculæ or other organisms, animal or vegetable, either living or dead, and at no time or season of the year, or in periods of epidemics, liable to propagate disease or cause the death of those who drink it. 2. It should be soft and pleasant to use with soap both for washing the person and clothes, for baths and other detergent purposes, and of a quality such as would not dissolve lead, or form a deposit when boiled. 3. It should be clear and bright, agreeable to the eye, and refreshing to the taste. 4. It should be well aerated, of a nearly uniform normal temperature, and not like river or surface water, unduly warm in summer and unduly cold in winter. All that is needed, in the opinion of Mr. Homersham, and most of the other authors of papers, to insure abundance of such pure water, is that public opinion be educated to insist upon it. Works adequate to provide a regular supply of water, whether for towns or for small groups of dwellings in the country, might be constructed at moderate expenses. —*Popular Science Monthly.*

How to Keep Cions.

Nurserymen who cut large quantities of grafts late in autumn, keep them in boxes in cellars, packed in damp moss; but farmers and others who wish to preserve a few for spring grafting may not have these apliances at hand. For such, a simple and perfect mode is to bury them in a dry place out of doors in an inverted box. Fill the box partly full with them, nail two or three strips across to hold them in place, and then place the the box in a hole dug for the purpose with the open side down, and cover it with six or eight inches of earth.—*Ex.*

THE INDUSTRIALIST.

SATURDAY, OCTOBER 26, 1878.

One hundred and sixty-five students enrolled this term.

Mrs. Anderson goes up to Junction City on this evening's train.

Average temperature for the week 53°.178; range of temperature 51°.

Those in want of fine pigs should visit the College yard, and see the thrifty Berkshires.

A trapeze performance by a one-legged man was one of the attractions in Manhattan last night.

A. A. Stewart went up to Blue Rapids Thursday, and at the present writing has not returned.

The expenses of students at the Staate Agricultural College are less than any other College in the State.

From the number of political meetings held in this vicinity, we judge that our brass band is making large profits.

We are glad to see so many new scholars coming in. It is evidence that the people of Kansas have faith in our school.

Prof. Platt went down to Wamego Thursday to attend Perkins' musical convention. He is expected home to-day.

The article headed "Agriculture as an Industrial Art," is another of the essays presented at the rhetorical exercises.

With a few exceptions, the locals which appear this week are the work of the rhetoric class, and part of their class duties.

One of the finest-looking fields of winter wheat in the neighborhood is that on the College farm, west of the mechanical building.

Many of the students attending the College this term are cutting down their expenses as much as possible by boarding themselves.

Mr. Burgoyne, our city photographer, was on the College grounds on Monday last taking photographs of the different buildings.

The local editor has been absent this week and our "devil" has had things his own way; this accounts for all irregularities in the paper.

President Anderson looked in upon us on Monday morning, and greeting us in his hearty genial way, he inspired us to renewed diligence.

Several flower beds have recently been made near the horticultural building. Next spring look for great attractions in "Van Deman's land."

The addition to the Congregational Church is under rapid headway. The workmen will commence putting on the roof the latter part of this week.

We have this week received the first number of the *University Courier*, a neat, eight-page paper, issued by the students of the State University at Lawrence.

The roof of the new building has been shingled and painted. The tower on the front has been erected, the floors are being laid, the windows put in and the masons are progressing finely with the pointing.

Hunters may be seen in all directions pursuing the festive prairie chickens. It may be well to remind sportsmen that hunting on the College farm is prohibited.

The last week or two has brought on quite a change in the weather. Ducks and prairie chickens are to be seen flying over, which is a pretty good sign that cold weather is approaching.

Notwithstanding the dismal financial prospects before them, in view of the near resumption of specie payments, the people of Manhattan are erecting buildings in every part of the town.

The Alpha Beta and Webster societies hold a union session this evening in the College. A good programme has been prepared All are invited to attend and promised a pleasant evening.

A cold northwest wind blew all day yesterday and last night it brought a storm. This morning the ground is white with snow. Prof. Failyer however, reports a rising barometer and predicts fair weather speedily.

We would acknowledge the receipt of the catalogue of Battle Creek College, of Michigan. Accompanying the catalogue were the two last numbers of the *College Record*, a handsome, twenty-four-column quarterly, published by the same institution.

The expenses of four young men who are keeping bachelor's hall have been, from September 1st to October 23d, $21.46 each. This includes house rent, furnishing of rooms, and the expenses of living. Books, clothing and other personal expenses not included.

That little dog, which stepped upon the platform and so wistfully asked to assist one of the young ladies in her rhetorical exercises, has left school. Probably its rapid promotion from the freshman class to a seat among the Faculty gave it the idea that its collegiate course was ended.

We received a call Thursday from Rev. Campbell, accompanied by Mr. Benson, the popular speaker on temperence. Mr. Benson spoke Wednesday evening in the Methodist and Thursday evening in the Christian Church. He had large audiences both evenings, and his lectures are highly spoken of.

Mr. S. A. Hayes, recently of Michigan, has been employed to take charge of the blacksmith shop. He has duly organized a large class in blacksmithing. The young men will have an excellent opportunity to learn the trade, for Mr. Hayes purposes to carry on a general custom business. Mr. Hayes has already shown that he is a superior workman. Those having horses to shoe will do well to give him a call. Satisfactory work or no charge.

The Alpha Beta Society met yesterday afternoon. The election of officers was quite exciting and as usual resulted in the election of a strong force. The debate was carried on by the new members exclusively and resulted in a defeat for the raising of woman's wages. The extemporaneous speaking was very spirited, a number of ladies taking exception to the decision of the judges of debate. The next question will decide the mode of presidential election. Two persons were initiated.

At the meeting of the Webster Society, Saturday evening, October 19th, Messrs. Messenger and Farnsworth were elected members and initiated. After a spirited debate, it was decided that the exemption law of Kansas should not be abolished. During the order of extemporaneous speaking, all the leading topics of the day were freely discussed. Among those which received special attention were the "Financial Question," "Southern War Claims," the "Indian Policy," and "Grant in 1880."

Mr. Records declaimed. The name of A. J. Sloan was proposed for membership. The following question was selected for debate in two weeks: "*Resolved*, That the United States should repudiate the war debt." Speakers: affirmative, Salter and Hulett; negative, Todd and Morrow. Declamation, R. H. Wright; select reading, F. Jewell.

REPORTER.

NATIONALIST ITEMS.

The prairie fires south of the Kansas, last week, burned up enough grass to feed cattle for weeks yet.

Never since the Pike's Peak travel has there been so many people going west, and we are glad to say a goodly number of them are settling in Riley county.

The Ulrich boys shipped a lot of nicely cut stone to Salina, last Saturday, to finish the front of the Catholic church, and curb the sidewalks around the building.

Hardly a day passes but what we hear persons inquiring for farms to rent. This is an uncommon thing in Kansas at this time of the year. From present indications, it won't be long before all the tillable land in the country will be under cultivation.

The Webster and Alpha Beta societies at the College will have a joint session Saturday evening. The question is, "*Resolved*, That the Constitution of the United States should prohibit foreigners from voting until they have resided in the United States ten years." Good speakers have been selected and a good time is expected.

Luther Benson's lecture on temperance Wednesday evening, at the Methodist church, was the most powerful to which we ever listened. The forcible, earnest, pathetic, and enthusiastic manner in which he portrayed the drunkard's life, and the appeal for the education of the young up to total abstinence, would have touched a heart of stone. Everybody should hear him to-night at the Christian church.

Mrs. F. Wahl, of Indiana, has purchased Mr. Jos. Davis' property, near Bluemont. She appears to be a lady of unusual intelligence, and we are glad to welcome her to our midst. She has four sons who will attend the Agricultural College.

Mr. and Mrs. Davis will, as soon as possible, go to California, to their only daughter, Mrs. Stringfield, who has a home at San Louis Obissco. Mr. Davis has held the highest office of trust in town and county, and probably but few people could go from us who are more truely respected and beloved than Mr. and Mrs. Davis. If they must leave us, we heartily wish them a pleasant trip to, and a happy home on, the Pacific coast.

DIRECTIONS TO APPLICANTS.

TERMS OF ADMISSION.

Candidates for admission must be fourteen years of age, and pass a satisfactory examination in reading; arithmetic, through decimal fractions; and English grammar, to syntax. Classes are started at the beginning of each year in Drill in Arithmetic and Drill in English; and the pupil must have the knowledge above indicated, else he will be unable to retain position if admitted.

Pupils will be received at any time during the year, if able to pass an additional examination upon the subjects studied by the classes which they expect to enter. But they will find it greatly to their advantage to be present at the opening of each term, or as soon thereafter as posssble.

GRADES.

Both the Literary and Industrial recitations are graded daily upon a scale of 100; and an examination of all classes is made at the close of each month. A student not attaining an average grade of sixty is promptly dropped to a lower class, or excluded from the Institution until able to do so. The work of grading is strict and uniform in all the departments, and this process is rigorously used for sifting out incompetent and indolent pupils; thus more than accomplishing all that is designed to be effected by a "high standard of admission." Hence, the student's continuance in the College wholly depends upon his own action.

The course is based upon the determination to make the labor required in the preparation of one industrial and three literary recitations as much as the average student can perfectly perform, in ten hours a day. We design to give the pupil the worth of the time expended at College; and, in order thereto, he must do a full day's work with brain or hand. Only those students who can maintain a standing of ninety in each study will be allowed to take more than the prescribed number of recitations; and no one will be permitted to have less than one industrial and three literary recitations.

RELIGIOUS.

Unless otherwise directed by parents, students are required to attend chapel at 8:30 A. M. on academic days, and divine service once every Sabbath.

EXPENSES.

There are no charges whatever for enrollment, attendance or instruction in the regular courses; nor are there any "contingent fees" for the repair of buildings, for the use of books or apparatus, for diplomas, or the kindred privileges usually grouped under the term "contingent." Male students are furnished instruction, the use of apparatus, instruments or tools, in both the literary and industrial classes marked out for them, without any charge. And the same is true of female students in the regular classes provided for them. Printing and Telegraphy are industrials primarily provided for the education of female students, and male students taking either of these are charged $1 per month for use of instruments.

Instrumental music is a fine art or "accomplishment," rather than a mechanical art. We do not place it among our "industrials" in the same sense, or for the same purpose, that we do those provided for teaching the trades. Accordingly, a fee of $12 per term, or seventy-five cents per week is required from female students for tuition and the use of pianos or organs.

The only charge made for material in either the literary or industrial departments is for the chemicals used by students in laboratory practice, which are furnished at wholesale prices, and amount to but a small sum.

Furnishing an absolutely free education is as much as can be reasonably asked; and the Institution neither boards, clothes, nor supplies the student with text-books. Boarding can be obtained in private families at from $2.75 to $4 per week. Washing costs from seventy-five cents to one dollar per dozen. Text-books, which can be procured in Manhattan, cost from $2 to $5 per term.

No student need expend over $5 per week; and many of our best pupils are living at $1.25 per week. Students desiring to "board themselves" can do so at from $1 to $2 per week. In a club of four young men, renting a house, the average cost to each for the term was $1.11 per week.

LABOR.

Manual labor by the students may be for either of two purposes: First, to acquire skill in a given art; second, to earn money. In the first case, the labor is educational; in the second, it should be paid for by the party benefited.

Educational Labor.—Manual labor in the reciations of the Industrial Departments, like mental labor in those of the Literary Departments, is purely educational and will not be remunerated. While the interest of the student will be held paramount in the direction of this labor, the practice necessary to dexterity will be required.

Remunerated Labor.—When the Institution needs labor on the Farm or elsewhere which is not educational, but simply for its own profit, and which a student is able and willing to perform, it becomes an employer instead of a teacher, and he an employe instead of a scholar. It pays for work, he works for pay. The relation between them is commercial, not educational; and both parties must act upon business principles. Hence, the College furnishes only such employment as its own interests require, and will pay according to the value of the service rendered at from seven to ten cents an hour.

AMOUNT EARNED.

It is impossible to predict how much a given person can earn, since that depends upon what he can do and what work there is to be done. Hence, it is wholly impossible for us to answer the question so often asked: "Do you think I can meet my expenses by work?" Some students make one-half their expenses, some the whole, and exceptional men have made more than expenses. As a rule, a faithful boy skilled in farm work can earn half his expenses on the Farm or in the Nursery. During the year he can ordinarily acquire sufficient skill in the wood or iron shops to enable him to make articles for sale. The whole question is one for his own consideration and decision. We can teach all who come, but cannot absolutely *promise* anything more. Hitherto we have refrained from holding out strong inducements respecting the amount of labor we might have to offer; but in view of the fact that during each of the last three years we have had more to do than the students could perform, we are inclined to give greater and positive encouragement on this point. Any boy who is in dead earnest, who is familiar with farm operations, and who can raise $50 to start with, should be able to carry himself through the four years' course. And certainly this places an education within the reach of every determined boy. As yet we are unable to offer similar advantages to girls, not requiring labor in the College departments which they can perform.

RULES.

1. Behave as a true man or woman should, at all times and in all places.

2. Attend to your own business promptly, thoroughly and courteously; and vigorously let alone that of other people.

3. Penalty: "Leave!"

PUBLICATIONS.

The "Hand-Book," published in 1874, containing a full discussion of the educational question and the aims of the Institution, will be forwarded to any one desiring it.

THE INDUSTRIALIST, a weekly journal edited by the Faculty and published by the Printing Department, contains original and seasonable articles on the Farm, Orchard, Trades, Sciences, and Education. Price, 75 cents a year. Address A. A. Stewart, Manhattan.

CALENDAR.

Fall Term 1878.—Begins Wednesday, September 4th, and closes Wednesday, December 20th.

TO NEW STUDENTS.

Bring the text-books you have been using. On arrival, first arrange for your boarding. A. A. Stewart, Sup't Printing Department, will furnish information, either by letter or on application, concerning boarding places or rooms for rent. Report to the President at 8:30 A. M., immediately after chapel, for enrollment.

For further information apply to Jno. A. Anderson, President, Manhattan, Kansas.

LITERARY SOCIETIES.

ALPHA BETA.—Chartered, December 26th, 1870. Meets in College building every Friday at 2 P. M. Ladies admitted. New students cordially invited to attend. A. T. BLAIN, President.
MISS JENNIE COE, Secretary.

WEBSTER.—Chartered, January, 1871. Meets in Telegraph Hall every Saturday evening. Visitors, especially students, always welcome.
JOHN MANN, President.
W. K. ECKMAN, Secretary.

RAILROAD TIME-TABLE.

KANSAS PACIFIC RAILWAY.

PASSENGER ARRIVES.

No. 2, going East	11:45 A. M.
No. 4, going East	3:47 A. M.
No. 1, going West	4:40 P. M.
No. 3, going West	4:35 A. M.
No. 9 (freight), going West	8:45 A. M.

Nos. 1 and 2 run daily; Nos. 3 and 9 run daily except Monday; No. 4 runs daily except Sunday. Passengers with tickets are carried on No. 9.

GEO. C. WILDER, Agent.

METEOROLOGICAL RECORD.

Condensed by Prof. Failyer from the observations taken at the State Agricultural College, for the week ending October 24th, 1878. Latitude, 39°12′; Longitude, 96°40′; Height, 1,200 feet.

DAY OF WEEK AND MONTH.		Temperature. Max.	Min.	Mean.	Bar. Mean Hight.	Inches of Rainfall.
Friday	18	60°	30°	45°	28.90	
Saturday	19	80	45	64 .50	28.64	
Sunday	20	77	54	65 .25	28.37	
Monday	21	59	33	47 .50	28.76	
Tuesday	22	68	29	50 .75	28.76	
Wednesday	23	66	42	53	28.64	
Thursday	24	55	41	46 .25	28.75	

Average temperature for the week, 53°.178.
Range of temperature for the week, 51°.

KANSAS STATE AGRICULTURAL COLLEGE.

INDUSTRIAL EDUCATION.

The real value of an education to the student depends upon two things: First, the practical worth of the knowledge taught; and, second, the degree in which he makes it his own. Hence, the ability of any institution to give a practical education depends upon the kind and aim of the knowledge it teaches, and upon the thoroughness of the instruction therein. The State Agricultural College was directly endowed by Congress, and is guided by the State, for the specific purpose of furnishing to the industrial classes of Kansas a "practical" education, that is, "one fit for use." As its name indicates, and as the statistics of the industries of the State require, its chief work must be that of giving a useful and usable education to those who will engage in farming; and, therefore, the Farmer's Course must, from the nature of the case, be its main one.

FARMER'S EDUCATION.

Words and figures are merely instruments with which to record ideas. They are not themselves ideas, nor should they be made the chief end of an education. As a wagon is necessary to haul grain, so are they a necessary part of an education; but as the wagon is not the grain, so they are not the knowledge which the farmer converts into money. Hence, the classics and higher mathematics are not taught. But it will be noticed in the following course that so soon as the pupil acquires working skill in the use of the English language as a tool, and of figures and lines as mathematical tools, those arts and sciences which present knowledge that has a cash value to the farmer are taught as rapidly as their importance and thorough acquisition will permit. Studies numbered (1) and (4) in the second, third and fourth years are the spine of the course, to which the others are as ribs and muscle.

FARMER'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Practical Agriculture (advanced.)		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit. Economy, Practical Law.		3. Practical Geometry.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. Practical Agricul. (elementary).		4. English Structure.	
5. Agricul. Chemistry, Meteorology.		5. Organic, Analytical Chemistry.		5. Physics.		5. Adv'd Arithmetic, Book-keeping.	
6. Logic.		6. Practical Surveying.		6. Industrial Drawing.		6. U.S. History, Industrial Drawing.	

WOMAN'S EDUCATION.

Nearly one-half of our students are females, and the Woman's Course is prepared expressly for their liberal and practical education. We have no doubt whatever that practical men and women, who understand what it means and what it seeks to do, will fully endorse it.

WOMAN'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Farm Economy, Special Hygiene.		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit'l Economy, Practical Law.		3. Industrial Drawing.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. English Literature.		4. English Structure.	
5. Phys'c'l Geography, Meteorology.		5. Organic, Household Chemistry.		5. Physics.		5. Adv'd Arith., Book-keeping.	
6. Logic.		6. Household Economy.		6. Industrial Drawing.		6. U.S. History, Industrial Drawing.	

MECHANIC'S EDUCATION.

Because of the adaptedness of the leading course to the wants of the intelligent mechanic, it has been found practically unnecessary to diverge from the Farmer's Course. Additional studies, specially adapted to the mechanic's use, will be furnished in a Post-Graduate's Course.

If it be urged that the distinctively agricultural knowledge taught in the Farmer's Course is not directly valuable to the mechanic, we reply that, admitting the point for the purpose of argument, yet: 1. This knowledge is of more practical value to the mechanic than is the Latin, Greek, or a half dozen other things embraced in the usual course preparatory to the professions; 2. That the great majority of Kansas mechanics will also be more or less engaged in agriculture; 3. That those studies in the course which are directly valuable to the mechanic, together with the shop facilities, offer a better mechanic's education than can be elsewhere found west of the Alleghanies.

INDUSTRIAL DEPARTMENTS.

Having knowledge in the head is one thing; ability to use it with the tongue, fingers or feet is quite another thing. Both are vital to success in practical life. A man might thoroughly understand the theoretical principles of carpentry, and yet, not having used the tools, be wholly unable to earn carpenter's wages. So in all other vocations. Accordingly, instruction is given in the following well-equipped Industrial Departments, and every student is required to recite in some one of them, as selected by the pupil or parent:

FOR MALE STUDENTS.	FOR FEMALE STUDENTS.
The Farm.	Dress-making.
The Nursery.	Printing.
Carpentry.	Telegraphy.
Cabinet-making.	Scroll-sawing.
Turning.	Carving.
Wagon-making.	Engraving.
Painting.	Photography.
Blacksmithing.	Instrumental Music.

Each of these departments is conducted exactly as in daily life, and aims to give precisely the drill received by an apprentice. No charge is made, either for tuition or material, from male students taking the Industrials provided for them; nor from female students taking the ones provided for them, except in the Department of Instrumental Music. Male students taking either Printing or Telegraphy are charged $1 per month for the use of material and instruments.

DEPARTMENTS OF INSTRUCTION.

DEPARTMENT OF AGRICULTURE.

PRACTICAL AGRICULTURE.

Second Year:—General principles of breeding; history and characteristics of breeds; adaptation of different breeds for special purposes and localities; implements of simple tillage; mechanical principles involved in their construction; act on of the plow upon soil and subsoil; principles of draught; influence of different adjustments upon draught; use of the dynamometer; value of hoed crops in a system of husbandry; the cultivation of corn and roots; soils that need drainage; how to lay out a system of drains; house drainage; sewerage.

Fourth Year: General view of agriculture, ancient and modern; agricultural progress of the last century; relative advantages of mixed husbandry and special farming; the selection and arrangement of the farm with reference to the system to be pursued; rotation of crops; general advantages of a rotation; the best rotation with reference to disposition of labor, production of manure, and extermination of weeds; pasturage and production of grain and forage crops; manures, how best housed and applied; composting manures; commercial fertilizers; systems of feeding; stall feeding; steaming food; soiling; experiments in feeding; farm buildings; farmhouses; barns.

FARM ECONOMY.

Woman's Course, Fourth Year: Dairy products as human food; influences affecting character of milk; manufacture of condensed milk; the factory system and household plan of cheese-making; treatment of rennet; general process of cheese manufacture; subsequent treatment of cheese; butter-making; creameries; "deep" and "shallow" setting systems; general process of butter-making; packing and preserving butter.

DEPARTMENT OF BOTANY AND PRACTICAL HORTICULTURE.

This department embraces a course of instruction in the elements of botany, structural and systematic, with a constant attention to the practical application of botany to the farm, orchard, garden, nursery and forest; also a course of lectures on Landscape Gardening. The instruction is mainly given by lectures, accompanied by regular practical drill in all the work of the fruit, vegetable and flower gardens, nursery, orchard, vineyard and ornamental grounds.

The lectures in Practical Horticulture embrace the following and kindred subjects: The relation of atmospheric motion, moisture and temperature to horticulture; seeds, the means of collecting and preserving; propagation, by seeds, cuttings, layers, suckers, grafting, budding; care of young plants; improvement of varieties; management of commercial and farm nursery; modes of pruning; the orchard; fruit suitable for orchard and garden culture; the flower, vegetable and fruit garden; importance and mode of forest culture; shelter belts and their influence; weeds and useful plants; noting the species of trees worthy of culture, either for profit or ornament.

LANDSCAPE GARDENING.

The lectures on Landscape Gardening not only unfold the accepted principles of the art, but at the same time give special attention to such applications of the art as may be made universally available in laying out and improvement of farms and the homes of the people. These lectures are accompanied by a practical drill in in the work of laying out and plotting grounds topographically.

CHEMICAL DEPARTMENT.

PHYSICS.

This includes a full consideration of the laws of mechanics, of liquids, gases and vapors, weights and measures, and specific gravity, followed by experimental study in the Physical Laboratory of the laws of heat, light, with spectrum analysis, electricity and magnetism, and the relation of these forces to plant and animal life. Text-book, Ganot.

INORGANIC CHEMISTRY.

This course is opened with a careful study of chemical forces and the laws governing chemical combination. The elements, with their compounds, are next considered in succession as to their history, properties, manufacture, and especially with regard to their uses on the farm and in the arts. These lectures are accompanied by an extended course of laboratory practice in which each student performs every experiment with his own hands. Text-book, Eliot & Storer.

ORGANIC CHEMISTRY.

This comprises a thorough study of the chemistry of the organic compounds, the composition of plants and of the various compounds derived from them. Constantly accompanied by laboratory practice.

CHEMICAL ANALYSIS.

In this course each student is furnished his stand in the Qualitative Laboratory, completely furnished with apparatus and chemicals for his own use. He here performs analyses of farm soils, plant ash, commercial manures, ores, mineral waters, commercial compounds, etc. After completing this course, he enters, if he desires, the Quantitative Laboratory, where he pursues a full course in quantitative analysis. Text-book, Kedzie's Manual.

AGRICULTURAL CHEMISTRY.

This includes a thorough consideration of the application of chemical principles to the economy of the farm; the origin and formation of soils; the classification and composition of soils; the analysis of soils and their adaptation to purposes of production; the composition and use of manures; composting; chemistry of farm operations, such as plowing, fallowing, draining, etc. Text-book, Johnson's "How Crops Feed."

METEOROLOGY.

Embracing the composition of the atmosphere; atmospheric pressure; temperature and humidity; laws of storms; rain, snow and atmospheric electricity. A full course in meteorological observations is taken under direction of the Signal Service. Text-book, Loomis' Meteorology.

MINERALOGY.

This includes the study of the laws of crystallography, with the properties, forms and uses of the principal minerals of the United States. Blowpipe analysis forms a very important part of the course, each student being required to name and identify a large series of minerals. Text-book, Dana's Mineralogy.

HOUSEHOLD CHEMISTRY.

A course of lectures on this subject is yearly delivered to a class of young ladies. The course embraces the chemistry of cooking; the composition of food; bread; tea, chocolate and coffee; butter and milk; ripening and preservation of fruits, etc.

SPECIAL COURSES

Are constantly in progress in Assaying, Pharmaceutical Chemistry and Photography.

ENGLISH LANGUAGE.

Words are simply tools used to express ideas; and, since the vast majority of our communications are made by the employment of spoken or written words, skill in using them is as profitable to the industrialist as dexterity with the needle is profitable to the seamstress. The direct aim of the course is to make the student skillful and intelligent in handling the machinery called language, just as an engineer handles a locomotive; and no drill will be omitted, or effort spared, to gain this end. Apart from the course itself, which is far more practical and complete than that usually found in literary colleges, the constant attention given this subject by all the departments, and especially the practice required in the printing classes, affords superior advantages to the student.

DRILL IN ENGLISH.

"As grammar was made after language, so ought it to be taught after language."—*Herbert Spencer.*

Drill in English embraces the following topics:

Sounds of the language; drill in producing the vocal, sub-vocal and aspirate elements with accuracy, distinctness and volume; vowels, consonants.

Letters: Form; power; rules for spelling, drill.

Words: Signification, properties, modifications, variations, relation and dependence.

Sentences: Drill in statement of ideas; description, clearness, terseness, vigor; business letters, discussion; capitalization; syllabication; punctuation; construction and analysis of sentences; elements, uses and names; criticism of compositions printed as written; proof reading; grammatical construction; superfluous words and clauses; drill in reading, speaking and penmanship.

Text-books: Webster's Academic Dictionary; Lee & Hadley's Advanced Lessons in Language.

Pupils deficient in spelling, etc., should enter the printing class, the printing-office being the work-shop of language.

STRUCTURE OF ENGLISH.

ELEMENTS OF WORDS.—The end aimed at in this study is to learn everything about words which will aid in their effective use. Among the topics included are:

Roots: What are they; their origin; their force and value as an element of language; the manner of their growth into different parts of speech.

Stems: Their derivation; their offices and properties; their relation to other parts of words.

Prefixes and Suffixes: The several sources whence derived; the relation of their force or significance to those sources; explanation of the laws and principles governing their use along with stems.

Compounds: Their value; their properties and uses; the laws governing their formation.

Synonyms: Definitions; causes of their abundance in English; the principles to be observed in choosing among them, to express a thought.

Criticism: This constitutes a prominent part of the exercises of the pupil through his whole course in the study of English. It not only diversifies and enlivens the class-room exercise, but reduces to practice the principles of the structure of the language. By this means, the student acquires not only a knowledge of English, but readiness and accuracy in speaking or writing it. The exercises in criticism embrace not only examination of selected matter, but original composition.

ELEMENTS OF SENTENCES.—The purpose in view in studying this subject is not to traverse the ground gone over in the study of grammar, but to fix in the mind of the student a clear understanding and remembrance of names, the properties and offices of the several classes of words entering into an English sentence, by showing him the reason of things; to make more simple, as well as interesting and practically useful, a study otherwise "dry and unprofitable" in many cases, by explaining the reason of the verbal forms and changes, the rules and maxims he is to remember and observe in his use of language. In the same manner he is conducted through a study of the mutual relations and dependencies of the several elements making up a sentence.

MATHEMATICAL DEPARTMENT.

Figures and lines, like words, are only instruments with which to convey ideas, or perform operations that cannot be easily done without them. The arithmetical principles used in business are few and simple; but accuracy and rapidity in computation are only gained by practice. College graduates often fail to retain clerkships, not because they do not know *why* given operations are performed, but because they can neither add, multiply or divide with that habitual correctness which renders their work reliable.

DRILL IN ARITHMETIC.

The chief design of this study is to make the student expert in the use of numbers, as employed by the industrialist for profit. The occupation of a successful farmer demands the application of every principle of practical arithmetic, and is taken as a starting point, rather than that of an abstract system. Beginning with a simple cash account, book-keeping is gradually developed to the full extent of its real utility. The areas of fields, expense of crops, construction of houses, sales of produce, and investment of capital, involve all the fundamental operations, and those of profit and loss, commission, taxes, insurance, exchange and stocks. Following this line, the student, so far from hammering away at "pure" science draws from the mathematical store-house what he needs, and sees why he needs it. Accuracy of calculation and posting, rather than a *mere* comprehension of the principles, is aimed at. Besides the recitation-room drill in business forms, practice in the field is also given. Estimating the number of cords in a pile of wood said to be 100x4x4 feet is one thing; measuring a pile of wood through which any number of cats may be harmlessly thrown, and in which four-feet sticks are the exception, is quite another and more difficult thing.

ARITHMETIC AND BOOK-KEEPING

Is a continuation of the above, having the same purpose and adopting such methods as the necessities of the class indicate. Thorough instruction in the principles and forms of business law is given. It will be seen that this method of teaching book-keeping, besides ensuring arithmetical practice, develops practical skill in that important art.

ALGEBRA.

Algebra is included in the course as a preparation for the study of Surveying.

DRAWING.

The practical value of Industrial Drawing can hardly be overestimated, first, because its study is the best drill for the development of the perceptive faculties, which are the ones most employed in daily life; and, second, because the working classes make a far greater use of lines than they do of figures. A farmer follows a line when laying a straight furrow; the carpenter uses the square and rule twenty times as often as he does figures; and a woman in cutting a pattern, or deciding that one bonnet is prettier than another, does so by the line or "form." So that either in its direct application, or in the exercise of that taste which comes from skill in using lines, this branch of mathematics is quite as important as a means of "mental discipline" as is the branch of computation, and is of far greater daily use. The admiral system of Prof. Walter Smith, Art Director of Massachusetts, is thoroughly followed through the grades of Free-hand, Geometrical, Object, Model, Perspective, Mechanical and Topographical Drawing, during the terms indicated by the Course of Study. In addition, constant practice in the application of lines to metal and wood is furnished in the Blacksmith, Carpenter, Turning, Scroll-sawing, Carving, Engraving and Printing shops, and to fabrics in the Sewing Department.

PRACTICAL GEOMETRY.

Not one farmer in a thousand ever uses the transit in surveying his land, the testimony of the county surveyor being decisive in court; but every farmer makes countless applications of lines and angles in laying off fields, roads, gardens, planning houses, determining levels, etc. The object of Practical Geometry is to teach the properties and uses of angles, and to make the student skillful in the application of lines to the field by the use of such simple instruments as are always within reach, or within his ability to construct; and accurate in the transferring of plans to the grounds, board or block.

PRACTICAL SURVEYING.

The drill in the use of figures and lines given by the mathematical course as above indicated, renders the mastery of surveying an easy task. There is no calculation made or formula used by the working engineer which cannot be readily understood and performed by a skillful arithmetician after proper instruction. The hand-book of the engineer is accordingly supplemented with such special guidance as is found necessary for a full comprehension of the mathematical principles and their applications; and extended field practice is required in the use of the compass, level, transit and theodlite.

STUDIES SPECIAL TO WOMAN.

Besides the studies already indicated, attention is called to the following:

SPECIAL HYGIENE.

As shown in the course, one term is devoted to the study of Physiology, from the text-book of Dr. J. C. Dalton. This is followed in the fourth year by a course of lectures to young ladies by Mrs. Cripps on the subject of Hygiene, embracing such instruction in hygienic matters as are valuable to woman.

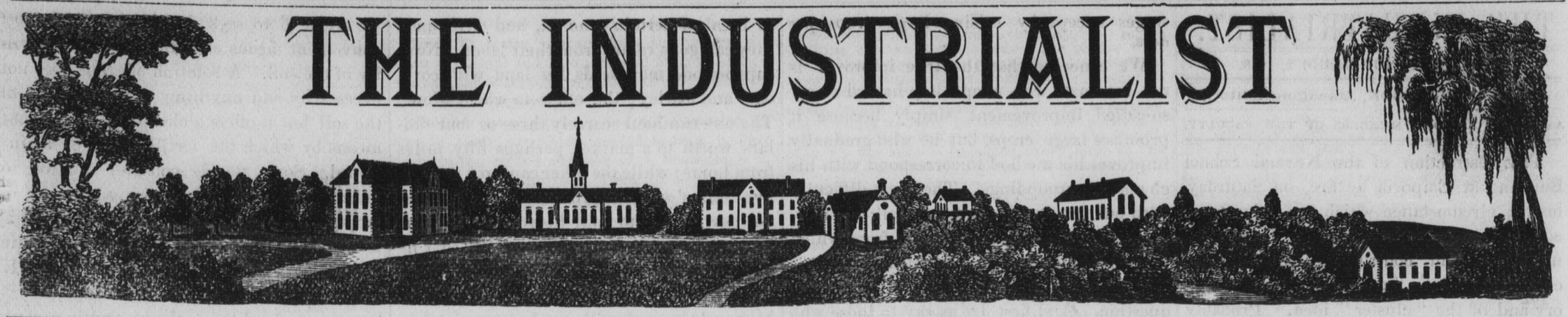
FARM ECONOMY considers those affairs of the farm which usually come under the supervision of the farmer's wife or daughter, and which are not included in "gardening" or "household economy;" such as butter and cheese-making, dairy management, etc. A course of lectures is delivered by the Professor of Practical Agriculture. See heading, "Farm Economy."

GARDENING is included in Practical Horticulture. See heading, "Landscape Gardening."

HOUSEHOLD CHEMISTRY. See heading, "Household Chemistry."

HOUSEHOLD ECONOMY

Follows Household Chemistry and consists of lectures by Mrs. Cripps in the art of house-keeping, embracing cookery, domestic management, and kindred topics. Many elderly gentlemen sufficiently know, and more young gentlemen will duly discover, that systematic knowledge of how cooking ought to be done is luminously different from the ability to do it. Instruction without practice can effect but little. Accordingly a kitchen laboratory has been completely furnished, and affords every facility for drill in the art of cooking. This drill chiefly differs from that of a kitchen in the respect that after a girl has learned to wash dishes or pare pototoes she is not kept everlastingly at either. After full trial we have found it just as feasible to give this practice, with profit and pleasure to the pupil, as it is to give laboratory practice in chemistry — and no more expensive.



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Address A. A. STEWART, Manhattan, Kas.

INDUSTRIAL EDUCATION.

Not the least of the things of which Kansas has a right to be proud is its magnificent educational system. At the start a wise and vigorous policy was adopted for the education of its youth; and ever since, whether in war or peace, poverty or plenty, the State has steadily developed and carefully fostered its various educational agencies. In addition to its munificent endowment of the public schools, it has provided higher institutions for three distinct kinds of instruction, namely, normal schools for the special training of public school teachers; a university for the education of those proposing to enter the professions of law, medicine or theology; and an agricultural college for the practical education of those who will engage in any of the "industrial professions or pursuits," as distinguished from the "learned professions." The relative demand for the three forms of education is indicated by the proportion in which the citizens of Kansas follow these vocations, as shown by the last United States census. Of every one hundred persons engaged in a vocation by which money is gained, the ratios were as follows:

Normal education:		
Teachers	1.13	= 1.13
Professional education:		
Ministers	0.43	
Lawyers	0.55	
Doctors	0.73	= 1.71
Industrial education:		
In agriculture	59.13	
In manufacturing and mechanical	14.63	
In personal service	13.89	
In trade and transportation	9.51	= 97.16
		100.00

AGRICULTURAL COLLEGE.

Recognizing the need for an education which should especially prepare the rising generations for an intelligent and successful practice of those vocations which are followed by ninety-seven out of each hundred of its citizens, the first institution endowed and put in operation by the State was its Agricultural College, so named because of the fact that agriculture is, both numerically and actually, the chief of these vocations. The title, "Agricultural" College, is apt to mislead those who are not familiar with the above fact, and also with the further fact that the acts of both Congress and of Kansas provide for an "industrial," as distinguished from a "professional" education.

ENDOWMENT.

The endowment received from the United States Government consisted of 81,601 acres of choice land, all of which had been sold at date of last report, except 31,461 acres now on the market. The proceeds from the sale of lands are invested in school bonds, and the securities in hand amounted to $238,101.28 by last report. The annual income from this endowment is about $20,000, out of which all expenses of instruction are paid. The only aid received from the State is for the erection of buildings, in accordance with the conditions of the congressional grant. This is the only one of the State's institutions which is not dependent upon the tax-payer for its maintenance.

LOCATION.

It is situated one mile from Manhattan, Riley county, one hundred and twenty miles west of the Missouri River, in the heart of the finest agricultural State in America. The Kansas Pacific Railway, with its connecting lines, gives speedy communication with every quarter.

COURSE OF STUDY.

The course of study is shaped with direct reference to giving an industrial as distinct from a professional education. It makes the pupil intelligent and expert in the use of the English language; in the use of numbers as employed by the farmer, book-keeper and engineer; and in the use of lines as employed by the carpenter, painter and architect. Words, figures and lines are tools which all men use. It then gives thorough instruction and laboratorial or field drill in the following sciences as essentially useful to an intelligent and successful farmer: Physiology, Practical Agriculture, Natural Philosophy, Botany, Entomology, Practical Horticulture, Landscape Gardening, Inorganic Chemistry, Organic and Analytical Chemistry, Surveying, Geology, Mineralogy, Zoology, Meteorology, Agricultural Chemistry, Political Economy, Practical Law and Logic. It has an equally practical and effective course for the education of woman as a woman, instead of as a man, and as a worker instead of as a butterfly. Then, it has a well-stocked farm and nursery, and well-equipped shops, for giving boys practice in farm and nursery work, and in wood and iron work, and for giving girls drill in dress-making, printing, telegraphy, carving, engraving and music.

Special Instruction Needed.

It is very much to be desired that the public mind should be still more deeply impressed than it is with the conviction that the acquisition of scientific and experimental knowledge is more needed in the successful cultivation of the soil than in any other pursuit. To become a successful farmer in the best sense of this expression, a more thorough knowledge of the principles of agricultural science are equally as desirable as thorough information in regard to any pursuit in which one should engage with a view of making it a success. The son of the farmer needs a special school of instruction — practical in character — to fit him for the duties of his calling. It is not so necessary to enumerate them as the putting into practice the resolution to avail himself of such opportunities as are at present presented.

Life is too short a period in which to fit men, with any degree of satisfaction, for the successful prosecution of more than one calling. Herein lies the necessity of more thorough preparation. Success in farming requires more thought and study than formerly, when the soil was fresh and abounded in all the elements of fertility. Manures are now needed where none were needed a quarter of a century ago. A vast area of surface is being cropped, but not cultivated as it should be. Special manures are now needed for certain kinds of soils. Is there not something more than mere physical labor required to restore to the soil special elements of fertility of which it has been robbed? The theory as well as the practice of agriculture must be called into requisition in order to make farming as remunerative in the future as it has been in the past.

Earnest young men who have some comprehension of the real wants of the agricultural community, are needed to resolutely set about the work of thorough preparation. The young man who is specially educated in the theory and practice of agriculture, will accomplish more, other things being equal, and will acquire more property in ten years, than he would in twice that length of time without the special instruction needed. Thorough preparation in the line of one's chosen profession or calling is the pathway that leads to success. One reason why so many fail to graduate at our agricultural colleges in the farm department, is because they do not make farming the centralizing idea of their lives and bend their energies in this direction. Far too few comprehend the vast amount of practical knowledge which can be acquired at a properly-conducted agricultural college, that can be made serviceable on the farm.— *Cincinnati Grange Bulletin.*

Breed Your Own Stock.

We lately conversed with a farmer who had lost all his property in the stock business. He was one of those kind of men who cannot wait for the slow profits of ordinary farming and stock raising, and so he commenced buying stock and feeding awhile, then turning it into the market, buying again, and so on. He succeeded well with the first few lots, as it was during the flush times of the late war, and he was thus led on to deeper investments, losing on some, making on others, but in the main constantly sinking money, until he was entirely "cleaned out." He bitterly regretted the course he pursued, and his advice to all farmers is — be content with the moderate but sure profits which come from raising your own cattle, horses, sheep, or swine, and in no case allow yourselves to be led into the uncertain mazes of speculation.

To our suggestion that some undoubtedly made money by buying and feeding stock, he replied: "The fewest number, and they are shrewd buyers, keep themselves well informed, and by long experience are enabled to prognosticate the market and govern themselves accordingly. Of a score of men who went into business when I did, but two or three made anything by it."

There is always a profit in breeding and rearing good stock on the farm, and there is often profit in buying young stock and feeding it up to maturity; but if there is a profit in the latter case, it is much greater in the former, so that the wisest plan is to breed and raise all that your land will support, leaving the uncertain profits of buying and selling to those who have not learned to "wait" as well as to "labor."— *Western Agriculturist.*

The Industrial West.

With the oversupply of labor and capital in the East, it is natural to look to the great teeming West for an outlet for the surplus labor and the employment of capital in great enterprises and achievements. The "West," that is, the great basin east of the Rocky Mountains and west of the Alleghanies, holds a variety of resources and offers an opportunity for industrial employment not elsewhere found in the world.

Bound by ties of blood in a common brotherhood, connected by the iron pathways, and associated in trade and commerce and political and social emulation, the East looks westward for her provisions and raw material, and for a market for her surplus and the employment of her overflow. How for is the world justified in its expectations of the West, and how much of hope is there of its industrial future?

What is to be the future of the West, and upon what basis of enterprise and achievement their prosperity is to be builded, can be only partially intimated. The first principle is the value to be derived from and the dependence to be placed upon her broad, unobstructed agricultural advantages. No other nation or locality has such resources and advantageous opportunities to begin with, and we are satisfied that the leaven of scientific cultivation now slowly working is soon to produce astonishing results in the great West. Not one-half the fertile land of Ohio, Indiana and Illinois is yet under cultivation, while but half the returns from the soil are received of which the land is capable. More labor will soon be given to ten acres than one hundred now receive, and the profits will be proportionately high.

Next after the agriculture the mineral resources of the West will yet be scientifically developed, and that to a proportinate profit. All other things upon the earth and in and under it are for the service of the farmer's pursuit, and in no part of the world is it so apparent as in the central Western States. No people can have more than they produce, and we are satisfied that no part of the world will take more interest or more pride in the development of their home resources to their utmost than the West. We are satisfied, too, that the central West is to be the great inland industrial empire of the world.— *Scientific American.*

THE Seniors at Waterville say, when asked about their health: "Dear sir, by persistent exertion of philosophical consciousness, concentrated by the most strenuous attention, I am able to inform you that the Ego, for which you interrogate, is in complete possession of the usual special faculites, and as soon as I have made accurate observations and comparisons of its coacervation of phenomena, I will endeavor to instruct you concerning the individual corpus that allows the conscious soul, through the senses, to come into contact with external and alienated objects."

Agricultural Education.

To farm profitably one must think correctly; and correct thought comes from reflection and training. It is the veriest folly to expect from the recent graduate a trained experience; but we should ask for a trained mind which can quickly receive the teachings of experience, and fit for profitable uses. We do not ask, for our part, for our colleges to graduate practical farmers; we but ask that they graduate men educated to act from principles, and to think correctly, and in whom the charms of a country life and the possibilities of a farming career have taken root. When farming, practical farming, has the sympathies of an educated class of men, there is everything to be hoped. When men trained to think, and whose thought is trained to take expression in action, enter upon the arena of a farming life, the possibilities of our soil and location are to become developed to an extent little realized. A class of educated farmers means greater opportunities for the common farmer whose education has been derived from toilsome experience and the conflict of trials. It means better and more practical lectures, a high-toned agricultural press, the exclusion of dead-beats from agricultural influence, and a healthier tone in agriculture generally. Education brings self-respect, and self-respect draws to itself the respect of others.—*Exchange.*

The Influence of One Mill.

A single woolen mill in the city of Lawrence produces every week a million yards of dyed or printed cloths. It pays $160,000 a week as wages. It employs 5,300 persons, paying them an average rate of 95 cents a day to women and girls, and $1.40 a day to men. It consumes 500 tons of starch, and expends $400,000 for printing and dyeing materials every year. The wool it requires calls for the fleeces of 10,000 head of sheep. It secures food, clothing, and usually respectable savings to 5,300 persons and their dependents — not less than 10,000 souls altogether. This, with the freights paid for transportation of its materials and products, shows what one mill contributes to the wealth, power, and prosperity of the country. The woolen industry of the whole country amounts to more than $200,000,000 a year. There are nearly a thousand woolen mills in Ohio and other Western States. —*Western Agriculturist.*

TEACH the boys to love the farm, but do not prove hard task-masters. Do not make their farm life one of drudgery and toil if you would have their thoughts turn lovingly to their old homes and happy young lives. Teach them that something more than muscle and physical endurance is required; that, indeed, agriculture is a science or art that should be conducted according to clearly-defined laws and well-established principles, and will be succesful in proportion to the intelligence that directs it.—*Exchange.*

WHAT is the annual corn crop of Kentucky? asked a foreign tourist of a Kentuckian. "I can't exactly say," replied the Kentuckian, "but I know it's enough to make all the whiskey we want, beside what is wasted for bread.

THE Michigan University has graduated four female lawyers, six female doctors, five female editors, and not a single female cook or housewife. The next generation will howl over missing shirt buttons.

EVERYTHING which is 'gilt-edged' in the way of farm produce brings the highest prices — butter, cheese, milk, fruit, and so on through the whole list of our farm products.

THE INDUSTRIALIST.

SATURDAY, NOVEMBER 2, 1878.

JNO. A. ANDERSON, Managing Editor.

ASSOCIATE EDITORS, MEMBERS OF THE FACULTY.

THE destruction of the Normal School Building at Emporia by fire, on Saturday last, a circumstance which all friends of education will deplore, brings forcibly to mind the old controversy between the champions of the "one big building" theory and of the "cluster" idea. Probably nowhere in the State are the relative merits of the two systems oftener discussed than by visitors to the Agricultural College. Without entering fully into the merits of the question, we desire to say that one of the reasons why this College has five moderate-sized buildings, each made for a special use, instead of one large, showy building, is to avoid a catastrophe similar to the one which happened at Emporia last week. We could not have a $10,000 fire, much less an $85,000 one, for the simple reason that we have not that much combustible material in one place.—*Prof. Shelton.*

"Talks on Manures."

A series of familiar and practical talks between the author and the Deacon, the Doctor and other neighbors, on the whole subject of manures and fertilizers; by Joseph Harris, M. S., author of "Walks and Talks on the Farm," "Harris on the Pig," etc. Orange, Judd & Co., New York.

We have read this book with a good deal of pleasure and profit, and as we lay it aside our "Deacon" encounters us with the ready question: Well, of what use is all this to Kansas farmers?

To properly answer this question, it is necessary to understand some of the fundamental conditions of western agriculture. The major portion of the farming of this State, the system or lack of system, which has to show for its results nearly all of the hundred million bushels of corn and thirty million bushels of wheat grown in the State the present season, would be called in the the East a ruinous "scourging system." The problem of the western farmer is a simple one. It is to grow the largest possible crops the *present* season; to "draw on" the accumulated plant food of the soil as long as the draft will be honored. This style of farming concerns itself with the present only, and it must be confessed that few of us have ventured to explore even in thought the great unknown land lying beyond the point at which the draft goes to protest. Nor are we disposed to quarrel with this system in its general features. A considerable experience as a reformer has taught us that the practice of a given locality, if not correct in all of its details, is in the main a correct one. We cannot afford to practice high farming, or to invest heavily per acre in farming, because such high farming has for its principal object to maintain or to increase the fertility of the soil.

Now, the cheapest and most abundant factor of our agriculture is rich soil, and he who aims to leave intact his capital locked up in the soil is husbanding what his neighbors and competitors are willing and anxious to sell and squander at the lowest rates. Nor does Mr. Harris advise this high farming. His views and aims are thus set forth:

"High farming aims to get large crops every year. *Good* farming produces equally large crops per acre, but not so many of them. * * * I am aiming to get 35 bushels of wheat per acre, 80 bushels of shelled corn, 50 bushels of barley, 90 bushels of oats, 300 bushels of potatoes, and 1,200 bushels of mangel-wurzels per acre, on the average. I can see no way of paying high wages except by raising large crops *per acre.*"

We conceive that the true improver is not the man who adopts hap-hazard every so-called improvement, simply because it promises large crops, but he who gradually improves his method to correspond with his changed surroundings. The great difficulty with our farmers is that they fall into ruts, they get into a habit of farming from which it is almost impossible to extricate them.

We are now ready to answer the Deacon's question. And first let us say to those who are inclined to take alarm at the name of a book on manures, that Mr. Harris is altogether practical. He teaches, indeed, how better crops may be grown, but he also teaches how they may be most profitably grown. Mr. Harris is himself a working, practical farmer, and it is needless to say to those who are familiar with his writings in the *American Agriculturist* and other journals, he is in full sympathy with all who earn their bread from the farm.

"Talks on Manures" will prove invaluable to every western farmer who has begun to think seriously of the future of his farm, and especially to that growing class whose farms from bad management have already begun to fail. To the stock raiser who wishes to obtain the best results from his feeding; to the thrifty farmer who desires to economize in all the waste products of the farm; to the specialist who wishes to make the most with his favorite crop; to all these, "Talks on Manures" will prove a "guide, philosopher and friend," and always a safe counselor. There are chapters on each of the following subjects and many others:

Farming as a Business —What is Manure — Tillage as Manure — Summer Fallowing — How to Restore a worn out Farm —How to make Manure — Foods which make Manure — The Author's Plan of managing Manure — The cheapest Manure a Farmer can Use—Manure for Special Crops, as corn, barley, oats, etc.,— Lawes & Gilbert's Experiments in Wheat —Most valuable and instructive tables, now first made accessible to the American farmer.

Those who consult this book expecting to find under the head of "Manures for Special Crops," analyses of the plants, and manures containing simply the elements removed by these plants, will be disappointed. The book is quite free from any such chemical quackery and *a priori* reasoning. In every case we believe it appeals to the "best experience of the best farmers."

"Talks on Manures" is written in familiar, conversational style. Its English is always good, and nowhere is it other than interesting. We are quite certain that it will be to the great and permanent advantage of the State if it shall have a large sale in Kansas.—*Prof. Shelton.*

Special Farming.

In a new country like Kansas, where the farmers are often poor and must needs have the quickest possible returns for labor, it seems to me that special husbandry is important and necessary. By growing a special crop, as wheat for instance, the farmer is always sure of an immediate return; in other words, wheat is always cash. By growing a variety of crops there are always some of them which, from their nature, are not intended to be sold from the land, but are meant to be consumed upon it and thus to maintain the fertility of the soil. Now, this is good doctrine, and I believe in it; but can the farmers at large afford it? The question is simply one of bread and butter, and comes right down to the problem, Can I do this and live? Suppose two men with equal means take a homestead in the western part of this State. Their capital just allows them to get teams and implements to break a certain amount, and live until they can get a return from their labor. Now, suppose one man seeds his land with corn, oats and barley; the other to wheat alone. The one can haul scarcely three or four dollars' worth to a market, perhaps fifty miles from home; while the other can haul twenty-five dollars' worth of produce. Now, it will not pay the one to haul his produce to market at all; so that he must eat all that he has grown at home, and go naked. The other finds that he gets abundant pay for his product, and will go home rejoicing, with food and clothing for his children.

It might be said that by the growth of special crops the land will be ruined. Perhaps it might degenerate, and all are in no wise agreed as to that; but would it not be a plain case of necessity until he had accumulated enough to enable him to live without directly selling the products from the land. Suppose a man take corn for his special crop. It is often argued against special farming that it decreases the supply of fodder so as to make stock raising impracticable. I don't see what more forage is necessary than hay, corn and corn-stalks, and I know that not one farmer out of twenty feeds more than that. If the stock were hogs, then only corn is necessary.

Now, an argument against special husbandry is that the land degenerates; but it by no means follows that this degeneration is the result of special husbandry, for we can take a certain succession of crops and greatly reduce the land and by a certain course of special cropping greatly increase the fertility. Thus, by the use of corn as a special crop and stock, the product is all fed out upon the land. Corn being a hoed crop, it keeps the land well pulverized and free from weeds; while if we take a certain succession, as wheat, oats and barley, they are all sold from the land, no manure is accumulated, the land is robbed of mineral matter, clogged with weeds, and in a few years may be exhausted. Hence, I consider that it is not strictly true that special farming ruins the land and mixed farming does not, for it depends almost entirely upon the system practiced. With a good farmer, either may prosper; with a poor one, either may fail.—*C. E. Wood, of class in Practical Agriculture.*

Rotation of Crops.

It is a fact, established beyond contradiction, that the most fertile soil may by constant and severe cropping be reduced to practical sterility. Although complete exhaustion of soil is impossible, yet it may be so reduced as to make the cost of cultivation exceed the products of the soil. To obviate this it is found necessary to give back to the soil, in the form of fertilizers, that which is taken away by cropping. Mr. Lawes makes a very fine distinction between the natural strength and the condition of soils. He says the natural strength of a soil is something inherent in its very nature and which cannot be taken from it. If a crop be grown upon land which is in low condition for many years, without a change or fertilizers, the average yield for the whole period will represent the natural strength of that soil.

The condition of a soil is represented by the amount of plant food stored up, and which may be applied to the production of crops. Our fertile prairies are in "condition;" exhausted soils are reduced to their natural strength. A soil may be in ever so good condition, yet it requires judicious cropping and the application of fertilizers to keep it from returning to its natural strength; but the application of manure is accompanied by a considerable expense, and we are lead to seek for the best and most convenient means of maintaining the fertility of the soil. A rotation of crops does not necessarily add anything to the fertility of the soil, but it offers a cheap and convenient means by which the fertility may be maintained. Some people consider rotation to mean simply a promiscuous succession of crops, with no particular end in view. This is a mistake, for a rotation is a systematic arrangement of crops for a certain end. It is well known that some crops are more exhausting to land than others; and in a rotation these are usually alternated with those which are not so exhausting, or take less substance from the land.

A rotation should consist of from four to six crops, and the farm be divided into as many fields as there are courses in the rotation. A rotation is usually arranged with reference to maintaining the fertility of the soil and distributing the labor of the season. It is found that different crops naturally succeed each other; thus, wheat will do much better after clover than will oats: and as different crops absorb different elements from the soil, a carefully arranged rotation renders the waste of land very slight. The benefits of a rotation are many, and the cost of it is no more than ordinary cropping; in fact the rotation is the cheaper, for it employs the laborer during the whole season.

The earliest modern rotation is the old Norfolk rotation, which consisted of a round of four crops, or four courses, the first being a crop of wheat; and after that was harvested the field was plowed and sowed to rye, which was fed off by cattle, and the next spring a crop of turnips was sowed, which was fed off by sheep. A crop of oats or barley was next taken, and then a crop of clover. The wheat crop was taken from the land, but the stolen crop of rye, being fed on the land, served to enrich it; and the turnips, being first manured and then cultivated during the whole season, and finally fed upon the land, left it in remarkably good condition for the oats or barley. This crop was also fed upon the farm and the manure applied to the land. The crop of clover which was next sown left the ground in good condition for the succeeding crop of wheat. This rotation proved very successful, and in time was modified so as to introduce other crops; and from this all our modern rotation has been derived.—*L. A. Salter, of class in Practical Agriculture.*

THE INDUSTRIALIST.

SATURDAY, NOVEMBER 2, 1878.

Total number of students enrolled, 166.

We have but little room for short items this week.

Our thanks are due and hereby tendered to Prof. Ward's rhetoric class for the newsy and well-filled local page which they prepared last week, in our absence.

Since our last report, the following students have entered College: *Iowa*—Edward P. Coleman; *Indiana*—Chas. A. Wahl, Fred E. Wahl, and Wm. H. Wahl; *Riley county*—Mary Clarke.

A meeting of the College Drill Club will be held in the College building next Tuesday night. New students are invited to attend and join the Club, which is an organization of students for the purpose of obtaining drill in parliamentary law.

The Horticultural Department was favored last week with a present from Mr. Wm. Cutter, of Junction City, in the shape of two very nice plants of *Yucca filamentosa*. This is not only a very hardy evergreen plant, but bears in midsummer a large stalk of beautiful creamy-white flowers.

The October numbers of *The Western Agriculturist*, Quincy, Ill., *The Western Homestead*, Leavenworth, and *The Review of Science and Industry*, Kansas City, have reached our table. These journals are very valuable, and each month they seem to contain additional features which commend them to the public.

Prof. VanDeman has handed us a copy of an interesting college paper, published at Delaware, Ohio, by the students of the Ohio Wesleyan University. It is called *The College Transcript*, and while all its columns are filled with choice reading matter, the local page displays especial freshness and originality. *Mr. Transcript*, please exchange.

The Alpha Betas held an interesting session on the 25th. This being the day for election of officers, the following persons were chosen: President, C. J. Reed; Vice-President, Gus Platt; Secretary, Miss Clarke; Treasurer, S. E. McNair; Marshal, A. T. Blain. The debate was interesting, the debaters all being new members and speaking well. Mr. Griffing delivered a first-class declamation. Extemporaneous speaking lively. Under miscellaneous business, Mr. W. S. Elliot was granted a withdrawal card, and Miss Browning and Mr. Ashmead initiated. H.

We paid Blue Rapids, that busy little manufacturing city north of us, a visit last week. Although there on business connected with the temperance work, we improved our leisure moments by strolling through the various manufactories, talking with the leading business men, and learning something of the past, present and future of the place. We had expected to write a brief report of our trip, telling some of the accidents and incidents connected with it, and setting forth the reasons why Blue Rapids expects to and at an early day will make a city of no small dimensions. This we can't do now, because of other work which presses upon us. At present we can only say that we do not know of any town in Kansas which has a more hopeful future than Blue Rapids. As soon as the water power there passes out of the hands of that defunct and bankrupt town company into the possession of some one who has the interests of the town at heart and will dispose of the power at reasonable figures, the little city will assume a new air and become a place of no little importance.

While at Blue Rapids we enjoyed the hospitality of S. J. Wright's family; and are under many obligations to the members of this household, and to Mr. M. C. Holman in particular, for favors shown us during our stay there. We shall remember with pleasure our first trip to the Rapids; and trust that ere long it may be our privilege to visit this enterprising city again.

THE JOINT SESSION.

A joint session of the Webster and Alpha Beta Literary Societies convened in the College Chapel, on the evening of the 26th. Meeting called to order by the chairman, W. C. Stewart. The exercises were opened with devotion, by Prof. Ward, followed by the opening address of L. A. Salter, whose remarks evinced careful thought and study. The audience was then welcomed by a chorus, "Greeting Glee," rendered by members of the advanced singing class. The debate was on the question, "*Resolved*, That the Constitution of the United States should prohibit all foreigners the right to vote until they have resided in the United States ten years." It was opened by C. M. Hulett, who was appointed to fill the vacancy caused by the sickness of W. S. Elliot. The negative was presented by W. H. Sikes, followed by George H. Perry on the affirmative and D. S. Leach on the negative. The debate was well conducted on either side, and a credit to the societies. The audience was then favored by a well-rendered quartette, "Beautiful Home," after which the judges, the Misses Vincent and Campbell and Messrs. Abbott, Morgan and Stackpole, rendered their decision in favor of the negative.

Next on the programme was a declamation by Gus H. Platt, but which proved to be a medley declamation by the addition of A. Beacham, S. E. McNair and J. N. Morrow. Their different subjects we have not yet fully determined, but have a faint knowledge that two were of parliamentary origin, while somebody said something about Casabianca. The one who stood his ground longest was the last-named speaker, and we discovered that he was a candidate for sheriff.

After a recess of ten minutes, the first part of the *Gleaner and Reporter* was presented by Irving Todd, who proved his ability to occupy the editor's chair. The second part of the paper, ably edited by Miss Ella Vincent, was presented by Miss Ettie Campbell, whose impromptu reading was a credit to herself and a pleasure to the audience. This was followed by a chorus, "I love the merry sunshine." Then came the closing address by A. T. Blain, after which the societies adjourned.

Many thanks are due our worthy chairman, W. C. Stewart. We would also extend our thanks to Prof. Platt for selecting and arranging the music, and to Miss Ettie Campbell as organist.

The success of the session was seen in the friendly feeling exhibited by the societies, and by the countenances of all present, that told of an evening well spent. May the harmony and good will which now exists between the societies be permanent, and may their future efforts be crowned with success. We shall look forward with interest to another joint session at the close of the present term. REPORTER.

NATIONALIST ITEMS.

C. D. Greeley has returned from his eastern trip.

The first snow of the season fell Saturday morning. It covered the ground.

The College farm wheat makes an extra quality of flour. So say those who have used it.

Chas. E. Allen purchased seven fine Shorthorn cows and one bull at the Hamilton sale in Kansas City, last week.

R. Ulrich & Sons have shipped two car loads of brick this week. Manhattan brick is the best made in western Kansas.

Misses Emma Hoyt and Nellie Elliott returned home from New York Thursday morning. Philo S. Mead came as far as St. Louis with them and will be here in a few days.

Mrs. Cripps has a project in view, the purpose of which is the better information of young mothers in regard to the physical, mental and moral training of their children. We are glad to chronicle this.

The photographs of the College, taken from the top of Prof. Gale's house, are very fine. We don't see why our artist could not build up a fortune for himself by putting up stereoscopic views of the fine scenery in this vicinity.

Col. John B. Anderson and E. B. Purcell have organized an elevator company, and will erect elevators at Manhattan and St. George. The work on the structure in this place has already commenced, and it is to be completed in sixty days. It will be 30x60 with a corn crib 20x90, and will require 90,000 feet of lumber. It will have the best machinery in use, and the storage capacity of each elevator will be 40,000 bushels.

A VISIT TO THE COLLEGE.

We were at the College this week for the first time since last spring, and went into the recitation rooms for the first time for nearly two years.

In the Workshop we found a primary class devoting its hour to learning the use of tools. Some of the more advanced were making tables, stands, and small writing desks, all for their own use, which can be done by paying for the lumber used.

In the Printing Department were a few at typesetting and folding papers. The class was not large at this hour.

In the Telegraph Department we found Mr. Stewart making preparation for his class which we met as we left the building.

Mrs. Cripps was training her girls in hygiene, and the sewing machines and garments were waiting until the girls had heard the words of wisdom from this daughter of Esculapius.

In the Music Department we found only one young lady practicing at the piano. We sincerely hope this branch of science is not in the background as the looks seemed to indicate. All one's life the ability to make music in the home is the most constant and the greatest comfort and blessing to mortal.

Prof. Walters, in the "Barn," had a large class in drawing. The students seemed enthusiastic and were doing good work.

Opposite, in the south room, we found Prof. Ward with a class of fifty or more, intent in the discussion of the science of oratory, or the art of speaking with accuracy, and composing so that their letters will not be a disgrace to a citizen of the United States.

Upstairs Prof. Platt was training fifty, more or less, in practical arithmetic. The boys purchasing lumber to cover a floor, the girls measuring wood; and all those every-day questions which come up in real life.

Prof. Shelton must have taken his boys off to the field or barn, for we couldn't find anything of the class, so remained in the room a few minutes and examined the samples of grain, minerals, etc., in the cabinet.

In the Horticultural Building we found Mr. VanDeman. As no class was in session, we admired the fernery, the plants, the specimens of wood, etc., etc.

In the Laboratory Mr. Failyer was directing a large class, which was experimenting with sulphuric acid, we think.

It was getting near dinner-time, and we rushed through the different rooms to the model kitchen; but we were not a Regent, alas! so we found no delicious viands spread on the hospitable board. Nothing but the clean kitchen, the pantry with the scolloped papers on the shelves, the artistically-arranged dishes, and as bare as the cupboard of Old Mother Hubbard. Nothing to do but to drive home, mourning because we were not a Regent, but wishing we were in the next best position—young enough to be a student and gain the knowledge we are sure is imparted every hour at the first-class Agricultural College.—*Nationalist.*

DIRECTIONS TO APPLICANTS.

TERMS OF ADMISSION.

Candidates for admission must be fourteen years of age, and pass a satisfactory examination in reading; arithmetic, through decimal fractions; and English grammar, to syntax. Classes are started at the beginning of each year in Drill in Arithmetic and Drill in English; and the pupil must have the knowledge above indicated, else he will be unable to retain position if admitted.

Pupils will be received at any time during the year, if able to pass an additional examination upon the subjects studied by the classes which they expect to enter. But they will find it greatly to their advantage to be present at the opening of each term, or as soon thereafter as possible.

GRADES.

Both the Literary and Industrial recitations are graded daily upon a scale of 100; and an examination of all classes is made at the close of each month. A student not attaining an average grade of sixty is promptly dropped to a lower class, or excluded from the Institution until able to do so. The work of grading is strict and uniform in all the departments, and this process is rigorously used for sifting out incompetent and indolent pupils; thus more than accomplishing all that is designed to be effected by a "high standard of admission." Hence, the student's continuance in the College wholly depends upon his own action.

The course is based upon the determination to make the labor required in the preparation of one industrial and three literary recitations as much as the average student can perfectly perform, in ten hours a day. We design to give the pupil the worth of the time expended at College; and, in order thereto, he must do a full day's work with brain or hand. Only those students who can maintain a standing of ninety in each study will be allowed to take more than the prescribed number of recitations; and no one will be permitted to have less than one industrial and three literary recitations.

RELIGIOUS.

Unless otherwise directed by parents, students are required to attend chapel at 8:30 A. M. on academic days, and divine service once every Sabbath.

EXPENSES.

There are no charges whatever for enrollment, attendance or instruction in the regular courses; nor are there any "contingent fees" for the repair of buildings, for the use of books or apparatus, for diplomas, or the kindred privileges usually grouped under the term "contingent." Male students are furnished instruction, the use of apparatus, instruments or tools, in both the literary and industrial classes marked out for them, without any charge. And the same is true of female students in the regular classes provided for them. Printing and Telegraphy are industrials primarily provided for the education of female students, and male students taking either of these are charged $1 per month for use of instruments.

Instrumental music is a fine art or "accomplishment," rather than a mechanical art. We do not place it among our "industrials" in the same sense, or for the same purpose, that we do those provided for teaching the trades. Accordingly, a fee of $12 per term, or seventy-five cents per week is required from female students for tuition and the use of pianos or organs.

The only charge made for material in either the literary or industrial departments is for the chemicals used by students in laboratory practice, which are furnished at wholesale prices, and amount to but a small sum.

Furnishing an absolutely free education is as much as can be reasonably asked; and the Institution neither boards, clothes, nor supplies the student with text-books. Boarding can be obtained in private families at from $2.75 to $4 per week. Washing costs from seventy-five cents to one dollar per dozen. Text-books, which can be procured in Manhattan, cost from $2 to $5 per term.

No student need expend over $5 per week; and many of our best pupils are living at $1.25 per week. Students desiring to "board themselves" can do so at from $1 to $2 per week. In a club of four young men, renting a house, the average cost to each for the term was $1.11 per week.

LABOR.

Manual labor by the students may be for either of two purposes: First, to acquire skill in a given art; second, to earn money. In the first case, the labor is educational; in the second, it should be paid for by the party benefited.

Educational Labor.—Manual labor in the reciations of the Industrial Departments, like mental labor in those of the Literary Departments, is purely educational and will not be remunerated. While the interest of the student will be held paramount in the direction of this labor, the practice necessary to dexterity will be required.

Remunerated Labor.—When the Institution needs labor on the Farm or elsewhere which is not educational, but simply for its own profit, and which a student is able and willing to perform, it becomes an employer instead of a teacher, and he an employe instead of a scholar. It pays for work, he works for pay. The relation between them is commercial, not educational; and both parties must act upon business principles. Hence, the College furnishes only such employment as its own interests require, and will pay according to the value of the service rendered at from seven to ten cents an hour.

AMOUNT EARNED.

It is impossible to predict how much a given person can earn, since that depends upon what he can do and what work there is to be done. Hence, it is wholly impossible for us to answer the question so often asked: "Do you think I can meet my expenses by work?" Some students make one-half their expenses, some the whole, and exceptional men have made more than expenses. As a rule, a faithful boy skilled in farm work can earn half his expenses on the Farm or in the Nursery. During the year he can ordinarily acquire sufficient skill in the wood or iron shops to enable him to make articles for sale. The whole question is one for his own consideration and decision. We can teach all who come, but cannot absolutely *promise* anything more. Hitherto we have refrained from holding out strong inducements respecting the amount of labor we might have to offer; but in view of the fact that during each of the last three years we have had more to do than the students could perform, we are inclined to give greater and positive encouragement on this point. Any boy who is in dead earnest, who is familiar with farm operations, and who can raise $50 to start with, should be able to carry himself through the four years' course. And certainly this places an education within the reach of every determined boy. As yet we are unable to offer similar advantages to girls, not requiring labor in the College departments which they can perform.

RULES.

1. Behave as a true man or woman should, at all times and in all places.

2. Attend to your own business promptly, thoroughly and courteously; and vigorously let alone that of other people.

3. Penalty: "Leave!"

PUBLICATIONS.

The "Hand-Book," published in 1874, containing a full discussion of the educational question and the aims of the Institution, will be forwarded to any one desiring it.

THE INDUSTRIALIST, a weekly journal edited by the Faculty and published by the Printing Department, contains original and seasonable articles on the Farm, Orchard, Trades, Sciences, and Education. Price, 75 cents a year. Address A. A. Stewart, Manhattan.

CALENDAR.

Fall Term 1878.—Begins Wednesday, September 4th, and closes Wednesday, December 20th.

TO NEW STUDENTS.

Bring the text-books you have been using. On arrival, first arrange for your boarding. A. A. Stewart, Sup't Printing Department, will furnish information, either by letter or on application, concerning boarding places or rooms for rent. Report to the President at 8:30 A. M., immediately after chapel, for enrollment.

For further information apply to Jno. A. Anderson, President, Manhattan, Kansas.

LITERARY SOCIETIES.

ALPHA BETA.—Chartered, December 26th, 1870. Meets in College building every Friday at 2 P. M. Ladies admitted. New students cordially invited to attend. A. T. BLAIN, President.
MISS JENNIE COE, Secretary.

WEBSTER.—Chartered, January, 1871. Meets in Telegraph Hall every Saturday evening. Visitors, especially students, always welcome.
JOHN MANN, President.
W. K. ECKMAN, Secretary.

RAILROAD TIME-TABLE.

KANSAS PACIFIC RAILWAY.

PASSENGER ARRIVES.

No. 2, going East	11:45 A. M.
No. 4, going East	3:47 A. M.
No. 1, going West	4:40 P. M.
No. 3, going West	4:35 A. M.
No. 9 (freight), going West	8:45 A. M.

Nos. 1 and 2 run daily; Nos. 3 and 9 run daily except Monday; No. 4 runs daily except Sunday. Passengers with tickets are carried on No. 9.
GEO. C. WILDER, Agent.

KANSAS STATE AGRICULTURAL COLLEGE.

FACULTY.

J. A. ANDERSON, *President, Prof. Political Economy.*
M. L. WARD, *Prof. Mathematics and English.*
G. H. FAILYER, *Prof. Chemistry and Physics.*
E. M. SHELTON, *Prof. Prac. Agricul., Sup't Farm.*
H. E. VAN DEMAN, *Prof. Botany and Horticulture.*
J. E. PLATT, *Prof. Elem'y English, Mathematics.*
JNO. D. WALTERS, *Teacher Industrial Drawing.*
HON. D. J. BREWER, *Lecturer on Practical Law.*
T. T. HAWKES, *Sup't Mechanical Department.*
A. A. STEWART, *Sup't Printing Department.*
W. C. STEWART, *Sup't Telegraph Department.*
MRS. M. E. CRIPPS, *Sup't Sewing Department.*
W. L. HOFER, *Teacher of Instrumental Music.*

INDUSTRIAL EDUCATION.

The real value of an education to the student depends upon two things: First, the practical worth of the knowledge taught; and, second, the degree in which he makes it his own. Hence, the ability of any institution to give a practical education depends upon the kind and aim of the knowledge it teaches, and upon the thoroughness of the instruction therein. The State Agricultural College was directly endowed by Congress, and is guided by the State, for the specific purpose of furnishing to the industrial classes of Kansas a "practical" education, that is, "one fit for use." As its name indicates, and as the statistics of the industries of the State require, its chief work must be that of giving a useful and usable education to those who will engage in farming; and, therefore, the Farmer's Course must, from the nature of the case, be its main one.

FARMER'S EDUCATION.

Words and figures are merely instruments with which to record ideas. They are not themselves ideas, nor should they be made the chief end of an education. As a wagon is necessary to haul grain, so are they a necessary part of an education; but as the wagon is not the grain, so they are not the knowledge which the farmer converts into money. Hence, the classics and higher mathematics are not taught. But it will be noticed in the following course that so soon as the pupil acquires working skill in the use of the English language as a tool, and of figures and lines as mathematical tools, those arts and sciences which present knowledge that has a cash value to the farmer are taught as rapidly as their importance and thorough acquisition will permit. Studies numbered (1) and (4) in the second, third and fourth years are the spine of the course, to which the others are as ribs and muscle.

FARMER'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Practical Agriculture (advanced.)		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit. Economy, Practical Law.		3. Practical Geometry.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. Practical Agricul. (elementary).		4. English Structure.	
5. Agricul. Chemistry, Meteorology.		5. Organic, Analytical Chemistry.		5. Physics.		5. Adv'd Arithmetic, Book-keeping.	
6. Logic.		6. Practical Surveying.		6. Industrial Drawing.		6. U.S. History, Industrial Drawing.	

WOMAN'S EDUCATION.

Nearly one-half of our students are females, and the Woman's Course is prepared expressly for their liberal and practical education. We have no doubt whatever that practical men and women, who understand what it means and what it seeks to do, will fully endorse it.

WOMAN'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Farm Economy, Special Hygiene.		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit'l Economy, Practical Law.		3. Industrial Drawing.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. English Literature.		4. English Structure.	
5. Phys'c'l Geography, Meteorology.		5. Household Economy.		5. Physics.		5. Adv'd Arith., Book-keeping.	
6. Logic.		6. Household Economy.		6. Industrial Drawing.		6. U.S. History, Industrial Drawing.	

MECHANIC'S EDUCATION.

Because of the adaptedness of the leading course to the wants of the intelligent mechanic, it has been found practically unnecessary to diverge from the Farmer's Course. Additional studies, specially adapted to the mechanic's use, will be furnished in a Post-Graduate's Course.

If it be urged that the distinctively agricultural knowledge taught in the Farmer's Course is not directly valuable to the mechanic, we reply that, admitting the point for the purpose of argument, yet: 1. This knowledge is of more practical value to the mechanic than is the Latin, Greek, or a half dozen other things embraced in the usual course preparatory to the professions; 2. That the great majority of Kansas mechanics will also be more or less engaged in agriculture; 3. That those studies in the course which are directly valuable to the mechanic, together with the shop facilities, offer a better mechanic's education than can be elsewhere found west of the Alleghanies.

INDUSTRIAL DEPARTMENTS.

Having knowledge in the head is one thing; ability to use it with the tongue, fingers or feet is quite another thing. Both are vital to success in practical life. A man might thoroughly understand the theoretical principles of carpentry, and yet, not having used the tools, be wholly unable to earn carpenter's wages. So in all other vocations. Accordingly, instruction is given in the following well-equipped Industrial Departments, and every student is required to recite in some one of them, as selected by the pupil or parent:

FOR MALE STUDENTS.	FOR FEMALE STUDENTS.
The Farm.	Dress-making.
The Nursery.	Printing.
Carpentry.	Telegraphy.
Cabinet-making.	Scroll-sawing.
Turning.	Carving.
Wagon-making.	Engraving.
Painting.	Photography.
Blacksmithing.	Instrumental Music.

Each of these departments is conducted exactly as in daily life, and aims to give precisely the drill received by an apprentice. No charge is made, either for tuition or material, from male students taking the Industrials provided for them; nor from female students taking the ones provided for them, except in the Department of Instrumental Music. Male students taking either Printing or Telegraphy are charged $1 per month for the use of material and instruments.

DEPARTMENTS OF INSTRUCTION.

DEPARTMENT OF AGRICULTURE.

PRACTICAL AGRICULTURE.

Second Year:—General principles of breeding; history and characteristics of breeds; adaptation of different breeds for special purposes and localities; implements of simple tillage; mechanical principles involved in their construction; act on of the plow upon soil and subsoil; principles of draught; influence of different adjustments upon draught; use of the dynamometer; value of hoed crops in a system of husbandry; the cultivation of corn and roots; soils that need drainage; how to lay out a system of drains; house drainage; sewerage.

Fourth Year: General view of agriculture, ancient and modern; agricultural progress of the last century; relative advantages of mixed husbandry and special farming; the selection and arrangement of the farm with reference to the system to be pursued; rotation of crops; genera advantages of a rotation; the best rotation with reference to disposition of labor, production of manure, and extermination of weeds; pasturage and production of grain and forage crops; manures, how best housed and applied; composting manures; commercial fertilizers; systems of feeding; stall feeding; steaming food; soiling; experiments in feeding; farm buildings; farmhouses; barns.

FARM ECONOMY.

Woman's Course, Fourth Year: Dairy products as human food; influences affecting character of milk; manufacture of condensed milk; the factory system and household plan of cheese-making; treatment of rennet; general process of cheese manufacture; subsequent t eatment of cheese; butter-making; creameries; "deep" and "shallow" setting systems; general process of butter-making; packing and preserving butter.

DEPARTMENT OF BOTANY AND PRACTICAL HORTICULTURE.

This department embraces a course of instruction in the elements of botany, structural and systematic, with a constant attention to the practical application of botany to the farm, orchard, garden, nursery and forest; also a course of lectures on Landscape Gardening. The instruction is mainly given by lectures, accompanied by regular practical drill in all the work of the fruit, vegetable and flower gardens, nursery, orchard, vineyard and ornamental grounds.

The lectures in Practical Horticulture embrace the following and kindred subjects: The relation of atmospheric motion, moisture and temperature to horticulture; seeds, the means of collecting and preserving; propagation, by seeds, cuttings, layers, suckers, grafting, budding; care of young plants; improvement of varieties; management of commercial and farm nursery; modes of pruning; the orchard; fruit suitable for orchard and garden culture; the flower, vegetable and fruit garden; importance and mode of forest culture; shelter belts and their influence; weeds and useful plants; noting the species of trees worthy of culture, either for profit or ornament.

LANDSCAPE GARDENING.

The lectures on Landscape Gardening not only unfold the accepted principles of the art, but at the same time give special attention to such applications of the art as may be made universally available in laying out and improvement of farms and the homes of the people. These lectures are accompanied by a practical drill in in the work of laying out and plotting grounds topographically.

CHEMICAL DEPARTMENT.

PHYSICS.

This includes a full consideration of the laws of mechanics, of liquids, gases and vapors, weights and measures, and specific gravity, followed by experimental study in the Physical Laboratory of the laws of heat, light, with spectrum analysis, electricity and magnetism, and the relation of these forces to plant and animal life. Text-book, Ganot.

INORGANIC CHEMISTRY.

This course is opened with a careful study of chemical forces and the laws governing chemical combination. The elements, with their compounds, are next considered in succession as to their history, properties, manufacture, and especially with regard to their uses on the farm and in the arts. These lectures are accompanied by an extended course of laboratory practice in which each student performs every experiment with his own hands. Text-book, Eliot & Storer.

ORGANIC CHEMISTRY.

This comprises a thorough study of the chemistry of the organic compounds, the composition of plants and of the various compounds derived from them. Constantly accompanied by laboratory practice.

CHEMICAL ANALYSIS.

In this course each student is furnished his stand in the Qualitative Laboratory, completely furnished with apparatus and chemicals for his own use. He here performs analyses of farm soils, plant ash, commercial manures, ores, mineral waters, commercial compounds, etc. After completing this course, he enters, if he desires, the Quantitative Laboratory, where he pursues a full course in quantitative analysis. Text-book, Kedzie's Manual.

AGRICULTURAL CHEMISTRY.

This includes a thorough consideration of the application of chemical principles to the economy of the farm; the origin and formation of soils; the classification and composition of soils; the analysis of soils and their adaptation to purposes of production; the composition and use of manures; composting; chemistry of farm operations, such as plowing, fallowing, draining, etc. Text-book, Johnson's "How Crops Feed."

METEOROLOGY.

Embracing the composition of the atmosphere; atmospheric pressure; temperature and humidity; laws of storms; rain, snow and atmospheric electricity. A full course in meteorological observations is taken under direction of the Signal Service. Text-book, Loomis' Meteorology.

MINERALOGY.

This includes the study of the laws of crystallography, with the properties, forms and uses of the principal minerals of the United States. Blowpipe analysis forms a very important part of the course, each student being required to name and identify a large series of minerals. Text-book, Dana's Mineralogy.

HOUSEHOLD CHEMISTRY.

A course of lectures on this subject is yearly delivered to a class of young ladies. The course embraces the chemistry of cooking; the composition of food; bread; tea, chocolate and coffee; butter and milk; ripening and preservation of fruits, etc.

SPECIAL COURSES

Are constantly in progress in Assaying, Pharmaceutical Chemistry and Photography.

ENGLISH LANGUAGE.

Words are simply tools used to express ideas; and, since the vast majority of our communications are made by the employment of spoken or written words, skill in using them is as profitable to the industrialist as dexterity with the needle is profitable to the seamstress. The direct aim of the course is to make the student skillful and intelligent in handling the machinery called language, just as an engineer handles a locomotive; and no drill will be omitted, or effort spared, to gain this end. Apart from the course itself, which is far more practical and complete than that usually found in literary colleges, the constant attention given this subject by all the departments, and especially the practice required in the printing classes, affords superior advantages to the student.

DRILL IN ENGLISH.

"As grammar was made after language, so ought it to be taught after language."—*Herbert Spencer.*

Drill in English embraces the following topics:

Sounds of the language; drill in producing the vocal, sub-vocal and aspirate elements with accuracy, distinctness and volume; vowels, consonants.

Letters: Form; power; rules for spelling, drill.

Words: Signification, properties, modifications, variations, relation and dependence.

Sentences: Drill in statement of ideas; description, clearness, terseness, vigor; business letters, discussion; capitalization; syllabication; punctuation; construction and analysis of sentences; elements, uses and names; criticism of compositions printed as written; proof reading; grammatical construction; superfluous words and clauses; drill in reading, speaking and penmanship.

Text-books: Webster's Academic Dictionary; Lee & Hadley's Advanced Lessons in Language.

Pupils deficient in spelling, etc., should enter the printing class, the printing-office being the work-shop of language.

STRUCTURE OF ENGLISH.

ELEMENTS OF WORDS.—The end aimed at in this study is to learn everything about words which will aid in their effective use. Among the topics included are:

Roots: What are they; their origin; their force and value as an element of language; the manner of their growth into different parts of speech.

Stems: Their derivation; their offices and properties; their relation to other parts of words.

Prefixes and Suffixes: The several sources whence derived; the relation of their force or significance to those sources; explanation of the laws and principles governing their use along with stems.

Compounds: Their value; their properties and uses; the laws governing their formation.

Synonyms: Definitions; causes of their abundance in English; the principles to be observed in choosing among them, to express a thought.

Criticism: This constitutes a prominent part of the exercises of the pupil through his whole course in the study of English. It not only diversifies and enlivens the class-room exercise, but reduces to practice the principles of the structure of the language. By this means, the student acquires not only a knowledge of English, but readiness and accuracy in speaking or writing it. The exercises in criticism embrace not only examination of selected matter, but original composition.

ELEMENTS OF SENTENCES.—The purpose in view in studying this subject is not to traverse the ground gone over in the study of grammar, but to fix in the mind of the student a clear understanding and remembrance of names, the properties and offices of the several classes of words entering into an English sentence, by showing him the reason of things; to make more simple, as well as interesting and practically useful, a study otherwise "dry and unprofitable" in many cases, by explaining the reason of the verbal forms and changes, the rules and maxims he is to remember and observe in his use of language. In the same manner he is conducted through a study of the mutual relations and dependencies of the several elements making up a sentence.

MATHEMATICAL DEPARTMENT.

Figures and lines, like words, are only instruments with which to convey ideas, or perform operations that cannot be easily done without them. The arithmetical principles used in business are few and simple; but accuracy and rapidity in computation are only gained by practice. College graduates often fail to retain clerkships, not because they do not know *why* given operations are performed, but because they can neither add, multiply or divide with that habitual correctness which renders their work reliable.

DRILL IN ARITHMETIC.

The chief design of this study is to make the student expert in the use of numbers, as employed by the industrialist for profit. The occupation of a successful farmer demands the application of every principle of practical arithmetic, and is taken as a starting point, rather than that of an abstract system. Beginning with a simple cash account, book-keeping is gradually developed to the full extent of its real utility. The areas of fields, expense of crops, construction of houses, sales of produce, and investment of capital, involve all the fundamental operations, and those of profit and loss, commission, taxes, insurance, exchange and stocks. Following this line, the student, so far from hammering away at "pure" science draws from the mathematical store-house what he needs, and sees why he needs it. Accuracy of calculation and posting, rather than a *mere* comprehension of the principles, is aimed at. Besides the recitation-room drill in business forms, practice in the field is also given. Estimating the number of cords in a pile of wood said to be 100x4x4 feet is one thing; measuring a pile of wood through which any number of cats may be harmlessly thrown, and in which four-feet sticks are the exception, is quite another and more difficult thing.

ARITHMETIC AND BOOK-KEEPING

Is a continuation of the above, having the same purpose and adopting such methods as the necessities of the class indicate. Thorough instruction in the principles and forms of business law is given. It will be seen that this method of teaching book-keeping, besides ensuring arithmetical practice, develops practical skill in that important art.

ALGEBRA.

Algebra is included in the course as a preparation for the study of Surveying.

DRAWING.

The practical value of Industrial Drawing can hardly be overestimated, first, because its study is the best drill for the development of the perceptive faculties, which are the ones most employed in daily life; and, second, because the working classes make a far greater use of lines than they do of figures. A farmer follows a line when laying a straight furrow; the carpenter uses the square and rule twenty times as often as he does figures; and a woman in cutting a pattern, or deciding that one bonnet is prettier than another, does so by the line or "form." So that either in its direct application, or in the exercise of that taste which comes from skill in using lines, this branch of mathematics is quite as important as a means of "mental discipline" as is the branch of computation, and is of far greater daily use. The admiral system of Prof. Walter Smith, Art Director of Massachusetts, is thoroughly followed through the grades of Free-hand, Geometrical, Object, Model, Perspective, Mechanical and Topographical Drawing, during the terms indicated by the Course of Study. In addition, constant practice in the application of lines to metal and wood is furnished in the Blacksmith, Carpenter, Turning, Scroll-sawing, Carving, Engraving and Printing shops, and to fabrics in the Sewing Department.

PRACTICAL GEOMETRY.

Not one farmer in a thousand ever uses the transit in surveying his land, the testimony of the county surveyor being decisive in court; but every farmer makes countless applications of lines and angles in laying off fields, roads, gardens, planning houses, determining levels, etc. The object of Practical Geometry is to teach the properties and uses of angles, and to make the student skillful in the application of lines to the field by the use of such simple instruments as are always within reach, or within his ability to construct; and accurate in the transferring of plans to the grounds, board or block.

PRACTICAL SURVEYING.

The drill in the use of figures and lines given by the mathematical course as above indicated, renders the mastery of surveying an easy task. There is no calculation made or formula used by the working engineer which cannot be readily understood and performed by a skillful arithmetician after proper instruction. The hand-book of the engineer is accordingly supplemented with such special guidance as is found necessary for a full comprehension of the mathematical principles and their applications; and extended field practice is required in the use of the compass, level, transit and theodlite.

STUDIES SPECIAL TO WOMAN.

Besides the studies already indicated, attention is called to the following:

SPECIAL HYGIENE.

As shown in the course, one term is devoted to the study of Physiology, from the text-book of Dr. J. C. Dalton. This is followed in the fourth year by a course of lectures to young ladies by Mrs. Cripps on the subject of Hygiene, embracing such instruction in hygienic matters as are valuable to woman.

FARM ECONOMY considers those affairs of the farm which usually come under the supervision of the farmer's wife or daughter, and which are not included in "gardening" or "household economy;" such as butter and cheese-making, dairy management, etc. A course of lectures is delivered by the Professor of Practical Agriculture. See heading, "Farm Economy."

GARDENING is included in Practical Horticulture. See heading, "Landscape Gardening."

HOUSEHOLD CHEMISTRY. See heading, "Household Chemistry."

HOUSEHOLD ECONOMY

Follows Household Chemistry and consists of lectures by Mrs. Cripps in the art of house-keeping, embracing cookery, domestic management, and kindred topics. Many elderly gentlemen sufficiently know, and more young gentlemen will duly discover, that systematic knowledge of how cooking ought to be done is luminously different from the ability to do it. Instruction without practice can effect but little. Accordingly a kitchen laboratory has been completely furnished, and affords every facility for drill in the art of cooking. This drill chiefly differs from that of a kitchen in the respect that after a girl has learned to wash dishes or pare pototoes she is not kept everlastingly at either. After full trial we have found it just as feasible to give this practice, with profit and pleasure to the pupil, as it is to give laboratory practice in chemistry—and no more expensive.

THE INDUSTRIALIST

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THE INDUSTRIALIST.

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Address A. A. STEWART, Manhattan, Kas.

INDUSTRIAL EDUCATION.

Not the least of the things of which Kansas has a right to be proud is its magnificent educational system. At the start a wise and vigorous policy was adopted for the education of its youth; and ever since, whether in war or peace, poverty or plenty, the State has steadily developed and carefully fostered its various educational agencies. In addition to its munificent endowment of the public schools, it has provided higher institutions for three distinct kinds of instruction, namely, normal schools for the special training of public school teachers; a university for the education of those proposing to enter the professions of law, medicine or theology; and an agricultural college for the practical education of those who will engage in any of the "industrial professions or pursuits," as distinguished from the "learned professions." The relative demand for the three forms of education is indicated by the proportion in which the citizens of Kansas follow these vocations, as shown by the last United States census. Of every one hundred persons engaged in a vocation by which money is gained, the ratios were as follows:

Normal education:		
Teachers	1.13	= 1.13
Professional education:		
Ministers	0.43	
Lawyers	0.55	
Doctors	0.73	= 1.71
Industrial education:		
In agriculture	59.13	
In manufacturing and mechanical	14.63	
In personal service	13.89	
In trade and transportation	9.51	= 97.16
		100.00

AGRICULTURAL COLLEGE.

Recognizing the need for an education which should especially prepare the rising generations for an intelligent and successful practice of those vocations which are followed by ninety-seven out of each hundred of its citizens, the first institution endowed and put in operation by the State was its Agricultural College, so named because of the fact that agriculture is, both numerically and actually, the chief of these vocations. The title, "Agricultural" College, is apt to mislead those who are not familiar with the above fact, and also with the further fact that the acts of both Congress and of Kansas provide for an "industrial," as distinguished from a "professional" education.

ENDOWMENT.

The endowment received from the United States Government consisted of 81,601 acres of choice land, all of which had been sold at date of last report, except 31,461 acres now on the market. The proceeds from the sale of lands are invested in school bonds, and the securities in hand amounted to $238,101.28 by last report. The annual income from this endowment is about $20,000, out of which all expenses of instruction are paid. The only aid received from the State is for the erection of buildings, in accordance with the conditions of the congressional grant. This is the only one of the State's institutions which is not dependent upon the tax-payer for its maintenance.

LOCATION.

It is situated one mile from Manhattan, Riley county, one hundred and twenty miles west of the Missouri River, in the heart of the finest agricultural State in America. The Kansas Pacific Railway, with its connecting lines, gives speedy communication with every quarter.

COURSE OF STUDY.

The course of study is shaped with direct reference to giving an industrial as distinct from a professional education. It makes the pupil intelligent and expert in the use of the English language; in the use of numbers as employed by the farmer, book-keeper and engineer; and in the use of lines as employed by the carpenter, painter and architect. Words, figures and lines are tools which all men use. It then gives thorough instruction and laboratorial or field drill in the following sciences as essentially useful to an intelligent and successful farmer: Physiology, Practical Agriculture, Natural Philosophy, Botany, Entomology, Practical Horticulture, Landscape Gardening, Inorganic Chemistry, Organic and Analytical Chemistry, Surveying, Geology, Mineralogy, Zoology, Meteorology, Agricultural Chemistry, Political Economy, Practical Law and Logic. It has an equally practical and effective course for the education of woman as a woman, instead of as a man, and as a worker instead of as a butterfly. Then, it has a well-stocked farm and nursery, and well-equipped shops, for giving boys practice in farm and nursery work, and in wood and iron work, and for giving girls drill in dress-making, printing, telegraphy, carving, engraving and music.

Agricultural Kansas.

[Address of Web Wilder at the Marshall County Fair.]

We are to celebrate the crowning year in the history of the imperial agricultural State of the Union. Kansas has passed through several periods of disaster and depression. She has had a taste and a surfeit of every bitter fruit given to man to eat. Lord Dundreary says that the reason why the dog wags the tail and not the tail the dog, is because the dog is bigger than the tail. But when Kansas had only 20,000 people, and the nation had 30,000,000, Kansas wagged the whole Union and settled its destiny. It is an immense thing to do, but it was done in a way altogether grand. In order to do it the farmers and poor settlers of Kansas had to face death at the hand of the assassin, to see their own homes destroyed by fire and their little villages and settlements consumed and left in ashes. That was the work she did not only for the United States, but for all Christendom. To make Kansas free was to make the United States free, and to save and preserve the Union on a basis of freedom — the only corner-stone of a Republic or of a civilized power. Such talk as this twenty years ago, would have been called political — the introduction of partizanism on a general occasion. And what a perversion of terms that was! Freedom a question of strife between political parties, and that, too, in a Republic! Why, it was not partizanism to agitate for freedom in Germany, or England, or France, or Italy. Even the imperial government of Russia took the question of human liberty into its own hands and decreed emancipation by the edict of the Emperor. The Muscovite did not set his children to tearing each others' throats to obtain the blessings of liberty. He did not fold his hands while some province on the confines of Persia or India decided the destiny of a vast empire by a cruel and relentless war. What an absolute monarch could do and did do in behalf of his subjects by a peaceful manifesto, the President of the American Republic did not do and would not do. He aided despotism, slavery and oppression, and he left the fate of the entire nation in the hands of the pioneers of Kansas. There are men here to-day who helped to bear the burdens of that immortal fight, and their children and those who come after them can never do too much to perpetuate their unselfish courage and valor, and their careful and heroic sacrifice of every personal comfort and reward in order that Kansas and the nation might be free. Of each one of them it can be said — of women not less than the men, but still more than the men —

"Semper honos nomenque tuum laudesque manebunt."

Of the other bitter fruits that you have been called upon to eat are those calamities that arise from climatic causes and from insect visitations, before which the bravest man may find himself helpless and dismayed. You know what they are. The result of a year's labor swept away in a single night. Perhaps the mortgage was to be met this year and the title to the farm made good to the family forever. Perhaps a bright and promising son or daughter was to receive enough from this year's harvest to furnish the means of education. Perhaps there was an aged mother in the East who was to be sent for, to come and light up the Kansas home if we could save a hundred dollars for that purpose this year. But the crops are devoured; there is a desolation in the fields; there is almost despair in the human hearts at the home fireside.

At several periods we have eaten of these bitter fruits, but Kansas has never despaired. She has held true and fast and firm with a heroism and a constancy not surpassed on any page of human history. They say that Kansas is proud; that she is beautiful. Well, she has something to be proud of. I have read somewhat of the records of other States and nations on the painted page of history and on the pictured walls of great galleries. Each great people is proud of its shining events and its resplendent heroes. Personal vanity is tiresome and insufferable, but the love of our State and nation, the homage paid to worthy and true men and women for glorious deeds — these are the very salt of national life.

It is the great agricultural triumph of the present year that leads us to contrast the dark days of our past history with this glowing success. It has not been obtained without labor. The rose, the queen of flowers, may spring from a soil reddened with human blood. Perfection through suffering is our State idea. No good thing can be obtained without work, and the better the thing the harder the work to get it,— and the thing itself is not only good but the work is good, giving health and cheerfulness to body and mind.

The man who works is the happy man, happy in his work not less than in the return it brings; and all labor in honorable callings and for worthy ends is honorable and ennobling. This is a fact in human nature, and it is with us also a national fact, an American idea. The loafer, be he rich or poor, is the last man to be envied. God has decreed that we should labor, and we should take pleasure in it; and the exceptional and rare person who does not appreciate this truth is a man more deserving of pity than censure.

The future of Kansas is assured. This year she is the second wheat State in the Union; no one can tell how soon she will lead the whole sisterhood of States as the producer of this cereal. Wheat is absolute money, not depending on legislation for its circulation, and easily convertible into the coin of the United States and of all Europe. Kansas is going to issue wheat in a sufficient volume to meet the demands of trade at home and abroad; and she don't care if the demand is for three billions of bushels, or for two hundred bushels per capita of the whole civilized world. She knows that wheat will meet the demands of the human appetite, relieve the wants of hunger, quiet the depression of the human system, and restore the prosperity of physical man.

Of the other sources of the wealth of the State — corn, cattle, hogs, potatoes and fruit — nobody but Alfred Gray can give the figures, and he is compelled to issue a report every month in order to keep up with the prolific productions of our teeming State. We take the census every year, and with these figures before our eyes no one can ever tell the actual population within 100,000. As soon as the assessor has made his rounds another car load of people has arrived and with it hundreds of prairie schooners. The most accurate statistician finds himself constantly baffled and beaten by the actual facts in our growth in wealth and population. Neither Mr. Gray himself nor any other citizen can tell how many mles of railroad there are in the State. A half dozen companies are extending their lines, and the railway terminus of to-day is a way station to-morrow. A man buys a ticket for Jerusalem Center and finds before he has completed his journey that the road has been extended to Jericho City.

The population of the State has probably already reached one million people. The work of a century, taking the growth of the old States as a standard, has been done in seventeen years. The next ten years will certainly make the population of the State two and a half millions. These figures are too low, but I have been living in Missouri the past two years, and have become slow and conservative, and have lost the power of a Kansas man to forecast the future.

This population comes from every State in the Union and from every country in Europe, and will form a people, the strongest, most intelligent, most inventive and enterprising to be found on the face of the globe. This new American, this Kansan, will surpass his European brother in mind and body, because the best stock is made by a union of the races. He will be more liberal, more generous, more tolerant — in a word, more wise.

* * * * * * * *

To-day I find myself by the side of the Big Blue and near what used to be called the Big Vermillion. Twenty years ago, in Doniphan county, we used to ask the settlers in their wagons what was their destination, and the answer then was, "the Blue" and "the Fermillion." They came here, and the result is now visible to all. They have made the prairie blossom as the rose; they have made homes for themselves and their children; they have filled your beautiful country with school-houses, and churches, and factories, and happy homes. The railroad is here, the telegraph — then confined to St. Louis — is here, and you have the stores of merchants, elegant private residences, and every comfort of civilization and refinement. It is a miracle that could be wrought nowhere else but in our own favored land. Let us continue the noble enterprises thus begun. We shall see here the proudest land under the sun, and we shall not be worthy ourselves unless we make it the best in every element of a high civilization.

THE wine-growing interest of California yields fully $500,000 annually to the revenue of that State.

IT is a lamentable fact a piece of pasteboard with a verse on it, given as a reward of merit in a Sabbath school, has not half the charm for a boy as the same sized piece of pasteboard with the simple talismanic words, "admit one."

THE rice crop in this country is the largest for ten or twelve years, and will approach two hundred thousand barrels. Such a crop will naturally depress prices, and it is probable that it will be marketed even as low as five cents per pound at wholesale.

RECENT statistics show that there are more than four hundred colleges in the United States, and about three thousand and eight hundred professors. The North-Western University claims the largest number of instructors. Harvard claims second place.

A CORRESPONDENT of the *Scientific American* states that butter, as we know it, was not in use before the commencement of the Christian era. It was then used as a cosmetic for hair-dressing by women. For some centuries later it was used as a burning oil for lamps, and churches were lighted with it in France at so late a period as the year 1500. Since then it may be considered as an article of food solely.

A MINNESOTA farmer being greatly annoyed by the ravages perpetrated in his garden by a number of pigs, consulted the town supervisor as to what he should do. "Shoot 'em — that's what you ought to do," said the supervisor. A few days after the pigs reappeared, when the farmer proceeded to "shoot 'em" to the number of six good-sized grunters. When the ownership of the pigs was ascertained, it was found that they all belonged to the farmer himself! But he thus got rid of the nuisance.

THE INDUSTRIALIST.

SATURDAY, NOVEMBER 9, 1878.

JNO. A. ANDERSON, Managing Editor.

ASSOCIATE EDITORS, MEMBERS OF THE FACULTY.

Uses of Electricity.

In an article a few weeks ago, we spoke of the progress of the electric telegraph, concluding with the telephone. We would enter into a minute description of the telephone, if time and space would permit. To those who wish to thoroughly understand the construction and working of the telephone, we would recommend a little work published by Prof. A. E. Dolbear, of Tuft's College, which gives the whole thing complete and is well worth the price — seventy-five cents. We have but partially shown to what extent electricity has been made use of for the transmission of intelligence. In this article we will endeavor to show other modes of transmitting intelligence by electricity except in form of messages, and also speak of other uses to which it is applied with practical success.

In cities we have what is called the American District Telegraph System, which is a system of wires running from a main or central office to any place of business or dwelling that may desire it. At the main or central office are electric bells connected to these lines, and at each station is a small instrument about 3x5 inches, looking very much like a small cast-iron box with a crank on one side of it. On the face of the instrument are four words, viz., "messenger," "police," carriage," and "fire." The instrument works automatically. By simply turning the crank to either of the words, the circuit is broken a certain number of times, and this taps the bell in the central office a number of times corresponding with the breaks made, and as each instrument gives a different signal the manager of the office knows where the signal comes from. If the signal is for a messenger, one is immediately dispatched, as there are a number of reliable boys kept at the office for that purpose. This system is invaluable in cities for "fire" and "police" alone, as the signal is given in an instant and assistance is on the ground in from one to five minutes.

Another system in use in cities is the "Fire Alarm," which is so arranged that from any part of the city an alarm is sent direct to the fire department, giving the exact locality of the fire, thus enabling the company to reach the fire in from one to three minutes after the alarm is given. The same signal that gives the location of the fire loosens the fastenings of the horses, and they are so trained that as soon as they hear the signal and the fastenings are loosed they take their positions at the hose carriage and engine, and in less time than it would take you to say "fire" twice with your mouth wide open, the men, engines, horses and all are in their places and gone.

The electric burglar alarm is another use of electricity, and is used in large dwellings, banks and stables, where valuable animals and other property are kept. This is arranged by having an annunciator, containing the name of each room or building with which it is connected, placed in the sleeping apartment. Wires are run from this annunciator to each window and door or outside building that is liable to be entered by burglars. If any window or door is disturbed, the bell on the annunciator is set ringing and at the same time an index on the annunciator points to the name of the room or building that is being entered. The closing of the window or door does not stop the ringing of the bell, which cannot stop until a switch on the annunciator is turned off.

A system similar to the above is also used in hotels. An annunciator with the numbers of the rooms on it is placed in the office; wires are run from the annunciator to each room, where they are attached to a push buttor. By pressing gently on this buttor, the bell on the annunciator in the office is rung, and at the same time an index points to the number of the room making the call.

Electricity is also being extensively used in the practice of medicine. Its physiological effects are found to be wonderful.

The electric pen is another wonderful little electric machine, but space will not admit of a description of it. From one writing with this pen, thousands of copies can be made. Electricity is also used in mines and quarries for lighting blasts. The wires run to a safe distance from the blast and it is lighted from the distant end of the wires, thus making it impossible for an explosion to take place until all is ready. We have also an electrical apparatus for lighting gas.

We might mention a hundred other uses that are made of electricity, but we have given most of the principal uses to which it is applied. We will mention but one more, and that is the electric light. From recent experiments it has been fully shown that electricity furnishes the cheapest and most natural light of all the artificial lights. Mr. Edison claims he has perfected an invention by which not only the cities but the small towns can be lighted at a much less cost than by gas or coal oil; and in consequence of this fact gas stocks are rapidly decreasing in value.—*W. C. Stewart.*

Our Public Schools.

When we look at the progress of scientific investigation in all departments of nature and speculation; when we read of the wonderful mechanical appliances of the newly discovered facts which are daily made; when we hear the reports of our government officials as to the wonderful efficiency and perfectness of our system of education; and when we look at the magnificent school and college buildings that dot the country, we are very apt to grow enthusiastic over the aspect of things in Uncle Sam's family and imagine ourselves at the threshold of the millenium. The tide of feeling carries us away from the stony past to a golden future, unfolding before our mind the picture of a great and enlightened nation — wealthy, happy and free. Thus we dream away until the newsboy brings the *Daily Telegraph*, which invariably puts a damper upon our enthusiasm by telling us that 3,000 or 8,000 hands have quit work somewhere and are preparing a riot.

How can that happen in a country which expends countless millions for education every year? So we ask ourselves. Had the public schools done their whole duty, such outbreaks could not occur. Even the ignorant would know that grievances, real or imaginary, in a free country, cannot be redressed by lawlessness and outrage; and that even if temporary relief could be obtained by such means, the remedy would be worse than the disease. Would an outbreak, such as the Pittsburg riot of last year for instance, have been possible if the workingmen engaged in it had been accustomed to think? Or let us stop still nearer. Is there not at this very day a movement spreading over this country that could have been prevented by a better education of the people? If the public school of our time has any function, as distinguished from systems or modes of education which preceded it, is it not to add intelligence to labor? And has our school done this? The *Daily Telegraph* answers, No.

Not that I would attempt here to say that our schools have not accomplished anything. Were it not for the public schools, the results of these strikes, riots and communistic movements would be still more disastrous. The good sense of a majority, fostered by public education, has thus far saved us from the horrors of the French commune. But there are men to-day, the first statesmen in the country, that tremble for the future, if the school system of the present can not be rendered more effective still, and be adjusted more efficiently to the different classes of the people.

Our school system evidently does not go low enough. It does not stoop to take in the classes that need it most. In its aspirations after higher respectabilities, it passes coldly the wounded Judean by the wayside. Well-clad boys and girls who can give six hours a day to the public school and several hours to preparation, are received with open arms and furnished with such opportunities as money could not have purchased half a century ago. But what provision is made for the poor boy and girl who must either attend irregularly or not at all? For those who have to work all day blacking boots or selling newspapers, or for those whose parents have no wish to send them to school, or for those who refuse to go if they could? The country is to-day full of young men and women who choose crime rather than honest labor to make a living, because of their ignorance.

To reach these classes is difficult; much more so than to elevate the standard of instruction of those that are safe. Many will argue: "Let the law-making power say, '*fiat lux*,'—let the government issue compulsory-attendance laws," and thus solve the problem, as they would "cure financial ills with fiat paper current bills." But it is no more improbable that a law would make good church members than that the Arabs of our streets and the neglected sons of poverty and crime could be reclaimed by a law requiring their regular attendance at school. To bring about this desired result, several factors must be brought into action.

We must never lose sight of the fact that a republic, resting on the basis of universal suffrage, cannot be perpetuated unless this suffrage is accompanied and stimulated by universal intelligence. We must create an overwhelming public sentiment in favor of education by all possible means; by electing only thoroughly educated men to office, by honoring the memory of heroes of science, by excluding ignorant people from the pleasures of society, and by speaking the best of our schools.

We must adjust our public schools and our higher institutions of learning to the wants of the poorer classes. There is a certain aristocratic air, a paper-collar dignity, perfuming the curriculum of our primary and high schools that is sufficient to scare any independent young American from the school-bench. What is the use of all this? he asks; and answers the question by absenting himself. And is he altogether wrong? Are boys created for the purpose of having spellers spelled and geographies memorized?

The logic of the average programme now in use is correct in so far as that each step which it prescribes is the very best preparation for the next higher step, but the true theory seems to be that each step should be the best possible preparation for stepping out rather than stepping up. How many that enter the school can complete its course?

The elements of political economy should be taught not only in colleges and high schools, but also in the upper classes of the primary schools. We make too much of the supposed difficulty of this subject. The elements of personal and social morality, the principles of good behavior, the nature and relations of money, capital, labor and wages, can well be made accessible to the young.

No one can be a good citizen unless he is a useful one, and to be a useful citizen he must have learned to work. Therefore, the State should also teach him to work. Newell says: "There is no escaping from the argument that if the State, for her own protection, is bound to interfere to prevent children from growing up in ignorance, she is equally bound to prevent them from growing up in idleness. If parental duties and obligations are insufficient to meet the one case, they are equally insufficient to meet the other." —*J. D. Walters.*

THE INDUSTRIALIST.

SATURDAY, NOVEMBER 9, 1878.

Total number of students enrolled, 168.

During the last two weeks there has been a marked increase in the number of visitors at the College.

Mrs. W. C. Stewart has gone up to Irving, where her parents reside, and W. C. is now boarding at Mrs. Wisner's.

It is rumored here that Joe Williamson is married, but we repel the insinuation. We don't believe a word of it. How is it, Joe?

An adjourned session of the Grand Division of the Sons of Temperance of Kansas, will be held in Manhattan, on Wednesday, Nov. 20th, 1878.

The monthly examinations were held last week, and the grades show that the students have done noble work. Again we must say, never have we had a better class of students than at present.

Col. J. B. Anderson, of Junction City, has been stopping on the Hill this week. He has gone into business in Manhattan, in company with Mr. Purcell, and in a few weeks will be prepared to handle any amount of all kinds of grain.

The Board of Regents will meet next Tuesday evening, Nov. 12th. The members will observe this notice and govern themselves accordingly. All accounts against the College will be audited at that time, and other important business transacted.

A change has been made in the time of opening and closing the College library. It is now opened every morning at eight o'clock and closed at half-past eight. Mr. D. S. Leach is the assistant librarian, and will receive and give out books at the time specified.

President Anderson came in on the train Thursday evening. The arduous work of the last two months seems to have agreed with him, as he is greatly improved in health. When he entered the chapel on Friday morning, the students greeted him with a hearty applause.

For the last six months George Platt has been teaching music near Vienna, Pottawatomie county. He has now concluded his labors there, and, after spending a few weeks in preparatory study, will start for Oberlin College. George is an energetic young man, and ought to succeed in iife.

Students who attended the College a few years ago will remember Miss Mildred Parsons, a student here in those days. She is now teaching in the Manhattan High School, a position to which she was elected last week. Her home is in Colorado Springs, from which place she came in response to a telegram.

Prof. VanDeman received a short visit this week from Mr. Wm. Cutter, of Junction City. He is a practical horticulturist and wishes the College prosperity. Mr. Cutter purchased two hundred of our pear trees and some other nursery stock. Send in your orders for pear trees; or, better than that, come and see them and visit the College.

The Cincinnati *Grange Bulletin* is one of our most valued exchanges. We prize it very highly, and, as our readers know, clip from it very frequently. Although published in the East, its articles are such as interest and benefit every intelligent farmer. Every department of the farm finds a place in its columns. We recommend it to the farmers and grangers of Kansas as a paper well worth a place at their firesides.

We take great pleasure in announcing the marriage of A. N. Godfrey to Miss Estella Bouton, both of Madison, Greenwood county. The happy event seems to have taken place some weeks ago, but the news did not reach "the Hill" until a few days since. Both of these estimable persons were students of the College last year, Mr. Godfrey graduating with the class of '78. Their faithful study, kind hearts, and genial natures won them many friends while here; and we trust that through life they may be attended with the same degree of health, prosperity and happiness which they enjoyed in their College days.

At the meeting of the Webster Society, held Saturday evening, Nov. 2d, the following officers were elected: President, C. M. Hulett; Vice-President, Irving Todd; Secretary, H. C. Rushmore; Treasurer, John Mann; Critic, Irving Todd; Librarian, R. O. Thomen; Marshal, R. H. Wright; and for reporter to the INDUSTRIALIST, W. K. Eckman. The debate was upon the advisability of repudiating the war debt, and was quite interesting. Although this seems to be a very one-sided question, yet the speakers on the affirmative produced strong argument in favor of their side. After a spirited contest, the judges decided in favor of the negative. As the election took up considerable time, the order of extemporaneous speaking was passed. Mr. Wright declaimed and Mr. Jewell read a very humorous selection. The time of meeting was changed from 7:30 to 7 P. M. The question, "*Resolved*, That government is of human and not of divine origin," will be discussed at the next meeting by Messrs. Jewell and Rushmore for the affirmative, and Messrs. Shartell and Leach for the negative. REPORTER.

From the meteorological observations for the month of October, taken at Lawrence, Kas., as published in the *Kansas Farmer*, we learn that the mean temperature of the month was 55°.55, being 2°.14 above the average October temperature for ten years. The highest temperature was 87°; the lowest, 20°.; range of temperature, 67°; rain and melted snow, .44 inches, 2.21 inches below the October average. The rainfall for the ten months of 1878, now completed, has been 34.95 inches, 3.47 inches above the average for this period in ten years.

The corresponding items taken from the records of this station are as follows: Mean temperature, 50°.36, 2°.64 less than the average for ten years. Maximum temperature, 89°; minimum, 17°; range, 72°; rain and melted snow, 1.06 inches, 1.60 inches less than the October average. Rainfall for the ten months of 1878, 36.31 inches, which is 7.23 inches above the average for the same period in ten years. F.

UNSEEN INFLUENCE.

Influence is one of the strong forces of this world. All persons have, in some period of their lives, been conscious of its magic power, and have yielded to its teachings. Some seem to possess the will that is easily guided and directed by others. They seem to be guided, while in reality they guide. This unseen influence is the most powerful, and its subjects are the most forcibly impressed. How much unseen influence is connected with association! How much the purer memories and associations of childhood affect our after life! One word, kept sacred from youth to manhood, will touch a hidden spring in the memory and bring to the lips the petition, "Lead us not into temptation." The word "mother," around which cluster the sweetest, holiest memories, has fallen upon the ear of the youth who is fast losing his honor and reputation by the many downward steps he has taken, leading directly from gambling and slight dissipation to hard drinking and ruin, and by its sweet influence has turned him from the broad path to the straight and narrow walks which finally lead to an honest name and a noble life. It has fallen upon the ear of the statesman and caused him to search the pages of time long past and to behold again the sweet visions that hover around the morning of his life. He hears the loving, gentle tone, as she called him "mother's boy" and told him he was all she had and she hoped his life would be pure and untarnished. The voice of conscience asks him if that loving prayer has been answered, and if, during the many years she has been at rest, her precepts have been his motto and his guide, and if he could look up to heaven and honestly say: "My life has been honest, and noble, and true."

These influences tend to our improvement, but there are others, dark and mysterious, that are just the reverse. There are evil temptations, evil thoughts and evil actions, which creep in all unbidden and strive just as hard to root out the good and sow in the place wicked deeds. Yes, how powerful is the influence which these messengers of evil exert upon our destiny. Despite ourselves, they shape in some degree our beliefs and, through these, our conduct. We cannot travel heavenward with the same speed as if these did not draw us back. Are we responsible that it is so? 'Tis hard to say. We know there is a difference in children.

"From the same cradle-side,
From the same mother's knee,"

one shall go forth to proclaim God's holy word, the other to be a dark page in the history of an otherwise happy family. G.

NATIONALIST ITEMS.

The repairs on the Congregational church are progressing rapidly.

Mrs. Wahl has commenced repairs and additions to her new home on Bluemont.

The new chandeliers at the Methodist church are quite an addition to the looks of the audience room.

Anderson has carried every county in the District, heard from, except Davis, which gave McClure forty-six majority.

Mrs. Jos. Davis left on Monday to visit her son, relatives and friends in Lafayette, Indiana. She will spend the winter East.

The Children's Temperance Alliance is increasing in interest. The meetings are much more interesting than in the summer, with the session in the very hottest part of the day.

Mason Long, the converted gambler, and grandest temperance orator in the West, will speak in Manhattan on Monday night, Nov. 11th, the place to be announced from the pulpits of the city. Mr. Long is known to some of the citizens of Manhattan as second to none of the speakers at the great Bismarck Camp-meeting.

DIRECTIONS TO APPLICANTS.

TERMS OF ADMISSION.

Candidates for admission must be fourteen years of age, and pass a satisfactory examination in reading; arithmetic, through decimal fractions; and English grammar, to syntax. Classes are started at the beginning of each year in Drill in Arithmetic and Drill in English; and the pupil must have the knowledge above indicated, else he will be unable to retain position if admitted.

Pupils will be received at any time during the year, if able to pass an additional examination upon the subjects studied by the classes which they expect to enter. But they will find it greatly to their advantage to be present at the opening of each term, or as soon thereafter as posssble.

GRADES.

Both the Literary and Industrial recitations are graded daily upon a scale of 100; and an examination of all classes is made at the close of each month. A student not attaining an average grade of sixty is promptly dropped to a lower class, or excluded from the Institution until able to do so. The work of grading is strict and uniform in all the departments, and this process is rigorously used for sifting out incompetent and indolent pupils; thus more than accomplishing all that is designed to be effected by a "high standard of admission." Hence, the student's continuance in the College wholly depends upon his own action.

The course is based upon the determination to make the labor required in the preparation of one industrial and three literary recitations as much as the average student can perfectly perform, in ten hours a day. We design to give the pupil the worth of the time expended at College; and, in order thereto, he must do a full day's work with brain or hand. Only those students who can maintain a standing of ninety in each study will be allowed to take more than the prescribed number of recitations; and no one will be permitted to have less than one industrial and three literary recitations.

RELIGIOUS.

Unless otherwise directed by parents, students are required to attend chapel at 8:30 A. M. on academic days, and divine service once every Sabbath.

EXPENSES.

There are no charges whatever for enrollment, attendance or instruction in the regular courses; nor are there any "contingent fees" for the repair of buildings, for the use of books or apparatus, for diplomas, or the kindred privileges usually grouped under the term "contingent." Male students are furnished instruction, the use of apparatus, instruments or tools, in both the literary and industrial classes marked out for them, without any charge. And the same is true of female students in the regular classes provided for them. Printing and Telegraphy are industrials primarily provided for the education of female students, and male students taking either of these are charged $1 per month for use of instruments.

Instrumental music is a fine art or "accomplishment," rather than a mechanical art. We do not place it among our "industrials" in the same sense, or for the same purpose, that we do those provided for teaching the trades. Accordingly, a fee of $12 per term, or seventy-five cents per week is required from female students for tuition and the use of pianos or organs.

The only charge made for material in either the literary or industrial departments is for the chemicals used by students in laboratory practice, which are furnished at wholesale prices, and amount to but a small sum.

Furnishing an absolutely free education is as much as can be reasonably asked; and the Institution neither boards, clothes, nor supplies the student with text-books. Boarding can be obtained in private families at from $2.75 to $4 per week. Washing costs from seventy-five cents to one dollar per dozen. Text-books, which can be procured in Manhattan, cost from $2 to $5 per term.

No student need expend over $5 per week; and many of our best pupils are living at $1.25 per week. Students desiring to "board themselves" can do so at from $1 to $2 per week. In a club of four young men, renting a house, the average cost to each for the term was $1.11 per week.

LABOR.

Manual labor by the students may be for either of two purposes: First, to acquire skill in a given art; second, to earn money. In the first case, the labor is educational; in the second, it should be paid for by the party benefited.

Educational Labor.—Manual labor in the recitations of the Industrial Departments, like mental labor in those of the Literary Departments, is purely educational and will not be remunerated. While the interest of the student will be held paramount in the direction of this labor, the practice necessary to dexterity will be required.

Remunerated Labor.—When the Institution needs labor on the Farm or elsewhere which is not educational, but simply for its own profit, and which a student is able and willing to perform, it becomes an employer instead of a teacher, and he an employe instead of a scholar. It pays for work, he works for pay. The relation between them is commercial, not educational; and both parties must act upon business principles. Hence, the College furnishes only such employment as its own interests require, and will pay according to the value of the service rendered at from seven to ten cents an hour.

AMOUNT EARNED.

It is impossible to predict how much a given person can earn, since that depends upon what he can do and what work there is to be done. Hence, it is wholly impossible for us to answer the question so often asked: "Do you think I can meet my expenses by work?" Some students make one-half their expenses, some the whole, and exceptional men have made more than expenses. As a rule, a faithful boy skilled in farm work can earn half his expenses on the Farm or in the Nursery. During the year he can ordinarily acquire sufficient skill in the wood or iron shops to enable him to make articles for sale. The whole question is one for his own consideration and decision. We can teach all who come, but cannot absolutely *promise* anything more. Hitherto we have refrained from holding out strong inducements respecting the amount of labor we might have to offer; but in view of the fact that during each of the last three years we have had more to do than the students could perform, we are inclined to give greater and positive encouragement on this point. Any boy who is in dead earnest, who is familiar with farm operations, and who can raise $50 to start with, should be able to carry himself through the four years' course. And certainly this places an education within the reach of every determined boy. As yet we are unable to offer similar advantages to girls, not requiring labor in the College departments which they can perform.

RULES.

1. Behave as a true man or woman should, at all times and in all places.

2. Attend to your own business promptly, thoroughly and courteously; and vigorously let alone that of other people.

3. Penalty: "Leave!"

PUBLICATIONS.

The "Hand-Book," published in 1874, containing a full discussion of the educational question and the aims of the Institution, will be forwarded to any one desiring it.

THE INDUSTRIALIST, a weekly journal edited by the Faculty and published by the Printing Department, contains original and seasonable articles on the Farm, Orchard, Trades, Sciences, and Education. Price, 75 cents a year. Address A. A. Stewart, Manhattan.

CALENDAR.

Fall Term 1878.—Begins Wednesday, September 4th, and closes Wednesday, December 20th.

TO NEW STUDENTS.

Bring the text-books you have been using. On arrival, first arrange for your boarding. A. A. Stewart, Sup't Printing Department, will furnish information, either by letter or on application, concerning boarding places or rooms for rent. Report to the President at 8:30 A. M., immediately after chapel, for enrollment.

For further information apply to Jno. A. Anderson, President, Manhattan, Kansas.

LITERARY SOCIETIES.

ALPHA BETA.—Chartered, December 26th, 1870. Meets in College building every Friday at 2 P. M. Ladies admitted. New students cordially invited to attend. C. J. REED, President.
MISS MARY CLARKE, Secretary.

WEBSTER.—Chartered, January, 1871. Meets in Telegraph Hall every Saturday evening. Visitors, especially students, always welcome.
C. M. HULETT, President.
H. C. RUSHMORE, Secretary.

RAILROAD TIME-TABLE.

KANSAS PACIFIC RAILWAY.

PASSENGER ARRIVES.

No. 2, going East	11:45 A. M.
No. 4, going East	3:47 A. M.
No. 1, going West	4:40 P. M.
No. 3, going West	4:35 A. M.
No. 9 (freight), going West	8:45 A. M.

Nos. 1 and 2 run daily; Nos. 3 and 9 run daily except Monday; No. 4 runs daily except Sunday. Passengers with tickets are carried on No. 9.
GEO. C. WILDER, Agent.

METEOROLOGICAL RECORD.

Condensed by Prof. Failyer from the observations taken at the State Agricultural College, for the week ending November 7th, 1878. Latitude, 39°12'; Longitude, 96°40'; Height, 1,200 feet.

DAY OF WEEK AND MONTH.		Temperature. Max.	Min.	Mean.	Bar. Mean Hight.	Inches of Rainfall.
Friday	1	73°	40°	59°.75	28.67	
Saturday	2	53	35	40 .75	29.08	
Sunday	3	65	23	43 .75	29.03	
Monday	4	74	30	58 .50	28.88	
Tuesday	5	75	54	67 .25	28.65	
Wednesday	6	70	52	57 .50	28.59	
Thursday	7	50	40	44 .75	28.93	

Average temperature for the week, 53°.18.
Range of temperature for the week, 52°.

KANSAS STATE AGRICULTURAL COLLEGE.

FACULTY.

J. A. ANDERSON, *President, Prof. Political Economy.*
M. L. WARD, *Prof. Mathematics and English.*
G. H. FAILYER, *Prof. Chemistry and Physics.*
E. M. SHELTON, *Prof. Prac. Agricul., Sup't Farm.*
H. E. VAN DEMAN, *Prof. Botany and Horticulture.*
J. E. PLATT, *Prof. Elem'y English, Mathematics.*
JNO. D. WALTERS, *Teacher Industrial Drawing.*
HON. D. J. BREWER, *Lecturer on Practical Law.*
T. T. HAWKES, *Sup't Mechanical Department.*
A. A. STEWART, *Sup't Printing Department.*
W. C. STEWART, *Sup't Telegraph Department.*
MRS. M. E. CRIPPS, *Sup't Sewing Department.*
W. L. HOFER, *Teacher of Instrumental Music.*

INDUSTRIAL EDUCATION.

The real value of an education to the student depends upon two things: First, the practical worth of the knowledge taught; and, second, the degree in which he makes it his own. Hence, the ability of any institution to give a practical education depends upon the kind and aim of the knowledge it teaches, and upon the thoroughness of the instruction therein. The State Agricultural College was directly endowed by Congress, and is guided by the State, for the specific purpose of furnishing to the industrial classes of Kansas a "practical" education, that is, "one fit for use." As its name indicates, and as the statistics of the industries of the State require, its chief work must be that of giving a useful and usable education to those who will engage in farming; and, therefore, the Farmer's Course must, from the nature of the case, be its main one.

FARMER'S EDUCATION.

Words and figures are merely instruments with which to record ideas. They are not themselves ideas, nor should they be made the chief end of an education. As a wagon is necessary to haul grain, so are they a necessary part of an education; but as the wagon is not the grain, so they are not the knowledge which the farmer converts into money. Hence, the classics and higher mathematics are not taught. But it will be noticed in the following course that so soon as the pupil acquires working skill in the use of the English language as a tool, and of figures and lines as mathematical tools, those arts and sciences which present knowledge that has a cash value to the farmer are taught as rapidly as their importance and thorough acquisition will permit. Studies numbered (1) and (4) in the second, third and fourth years are the spine of the course, to which the others are as ribs and muscle.

FARMER'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Practical Agriculture (advanced.)		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit. Economy, Practical Law.		3. Practical Geometry.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. Practical Agricul. (elementary).		4. English Structure.	
5. Agricul. Chemistry, Meteorology.		5. Organic, Analytical Chemistry.		5. Physics.		5. Adv'd Arithmetic, Book-keeping.	
6. Logic.		6. Practical Surveying.		6. Industrial Drawing.		6. U. S. History, Industrial Drawing.	

WOMAN'S EDUCATION.

Nearly one-half of our students are females, and the Woman's Course is prepared expressly for their liberal and practical education. We have no doubt whatever that practical men and women, who understand what it means and what it seeks to do, will fully endorse it.

WOMAN'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Farm Economy, Special Hygiene.		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit'l Economy, Practical Law.		3. Industrial Drawing.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. English Literature.		4. English Structure.	
5. Phys'c'l Geography, Meteorology.		5. Organic, Household Chemistry.		5. Physics.		5. Adv'd Arith., Book-keeping.	
6. Logic.		6. Household Economy.		6. Industrial Drawing.		6. U. S. History, Industrial Drawing.	

MECHANIC'S EDUCATION.

Because of the adaptedness of the leading course to the wants of the intelligent mechanic, it has been found practically unnecessary to diverge from the Farmer's Course. Additional studies, specially adapted to the mechanic's use, will be furnished in a Post-Graduate's Course.

If it be urged that the distinctively agricultural knowledge taught in the Farmer's Course is not directly valuable to the mechanic, we reply that, admitting the point for the purpose of argument, yet: 1. This knowledge is of more practical value to the mechanic than is the Latin, Greek, or a half dozen other things embraced in the usual course preparatory to the professions; 2. That the great majority of Kansas mechanics will also be more or less engaged in agriculture; 3. That those studies in the course which are directly valuable to the mechanic, together with the shop facilities, offer a better mechanic's education than can be elsewhere found west of the Alleghanies.

INDUSTRIAL DEPARTMENTS.

Having knowledge in the head is one thing; ability to use it with the tongue, fingers or feet is quite another thing. Both are vital to success in practical life. A man might thoroughly understand the theoretical principles of carpentry, and yet, not having used the tools, be wholly unable to earn carpenter's wages. So in all other vocations. Accordingly, instruction is given in the following well-equipped Industrial Departments, and every student is required to recite in some one of them, as selected by the pupil or parent:

FOR MALE STUDENTS.	FOR FEMALE STUDENTS.
The Farm.	Dress-making.
The Nursery.	Printing.
Carpentry.	Telegraphy.
Cabinet-making.	Scroll-sawing.
Turning.	Carving.
Wagon-making.	Engraving.
Painting.	Photography.
Blacksmithing.	Instrumental Music.

Each of these departments is conducted exactly as in daily life, and aims to give precisely the drill received by an apprentice. No charge is made, either for tuition or material, from male students taking the Industrials provided for them; nor from female students taking the ones provided for them, except in the Department of Instrumental Music. Male students taking either Printing or Telegraphy are charged $1 per month for the use of material and instruments.

DEPARTMENTS OF INSTRUCTION.

DEPARTMENT OF AGRICULTURE.

PRACTICAL AGRICULTURE.

Second Year:—General principles of breeding; history and characteristics of breeds; adaptation of different breeds for special purposes and localities; implements of simple tillage; mechanical principles involved in their construction; action of the plow upon soil and subsoil; principles of draught; influence of different adjustments upon draught; use of the dynamometer; value of hoed crops in a system of husbandry; the cultivation of corn and roots; soils that need drainage; how to lay out a system of drains; house drainage; sewerage.

Fourth Year: General view of agriculture, ancient and modern; agricultural progress of the last century; relative advantages of mixed husbandry and special farming; the selection and arrangement of the farm with reference to the system to be pursued; rotation of crops; general advantages of a rotation; the best rotation with reference to disposition of labor, production of manure, and extermination of weeds; pasturage and production of grain and forage crops; manures, how best housed and applied; composting manures; commercial fertilizers; systems of feeding; stall feeding; steaming food; soiling; experiments in feeding; farm buildings; farmhouses; barns.

FARM ECONOMY.

Woman's Course, Fourth Year: Dairy products as human food; influences affecting character of milk; manufacture of condensed milk; the factory system and household plan of cheese-making; treatment of rennet; general process of cheese manufacture; subsequent treatment of cheese; butter-making; creameries; "deep" and "shallow" setting systems; general process of butter-making; packing and preserving butter.

DEPARTMENT OF BOTANY AND PRACTICAL HORTICULTURE.

This department embraces a course of instruction in the elements of botany, structural and systematic, with a constant attention to the practical application of botany to the farm, orchard, garden, nursery and forest; also a course of lectures on Landscape Gardening. The instruction is mainly given by lectures, accompanied by regular practical drill in all the work of the fruit, vegetable and flower gardens, nursery, orchard, vineyard and ornamental grounds.

The lectures in Practical Horticulture embrace the following and kindred subjects: The relation of atmospheric motion, moisture and temperature to horticulture; seeds, the means of collecting and preserving; propagation, by seeds, cuttings, layers, suckers, grafting, budding; care of young plants; improvement of varieties; management of commercial and farm nursery; modes of pruning; the orchard; fruit suitable for orchard and garden culture; the flower, vegetable and fruit garden; importance and mode of forest culture; shelter belts and their influence; weeds and useful plants; noting the species of trees worthy of culture, either for profit or ornament.

LANDSCAPE GARDENING.

The lectures on Landscape Gardening not only unfold the accepted principles of the art, but at the same time give special attention to such applications of the art as may be made universally available in laying out and improvement of farms and the homes of the people. These lectures are accompanied by a practical drill in in the work of laying out and plotting grounds topographically.

CHEMICAL DEPARTMENT.

PHYSICS.

This includes a full consideration of the laws of mechanics, of liquids, gases and vapors, weights and measures, and specific gravity, followed by experimental study in the Physical Laboratory of the laws of heat, light, with spectrum analysis, electricity and magnetism, and the relation of these forces to plant and animal life. Text-book, Ganot.

INORGANIC CHEMISTRY.

This course is opened with a careful study of chemical forces and the laws governing chemical combination. The elements, with their compounds, are next considered in succession as to their history, properties, manufacture, and especially with regard to their uses on the farm and in the arts. These lectures are accompanied by an extended course of laboratory practice in which each student performs every experiment with his own hands. Text-book, Eliot & Storer.

ORGANIC CHEMISTRY.

This comprises a thorough study of the chemistry of the organic compounds, the composition of plants and of the various compounds derived from them. Constantly accompanied by laboratory practice.

CHEMICAL ANALYSIS.

In this course each student is furnished his stand in the Qualitative Laboratory, completely furnished with apparatus and chemicals for his own use. He here performs analyses of farm soils, plant ash, commercial manures, ores, mineral waters, commercial compounds, etc. After completing this course, he enters, if he desires, the Quantitative Laboratory, where he pursues a full course in quantitative analysis. Text-book, Kedzie's Manual.

AGRICULTURAL CHEMISTRY.

This includes a thorough consideration of the application of chemical principles to the economy of the farm; the origin and formation of soils; the classification and composition of soils; the analysis of soils and their adaptation to purposes of production; the composition and use of manures; composting; chemistry of farm operations, such as plowing, fallowing, draining, etc. Text-book, Johnson's "How Crops Feed."

METEOROLOGY.

Embracing the composition of the atmosphere; atmospheric pressure; temperature and humidity; laws of storms; rain, snow and atmospheric electricity. A full course in meteorological observations is taken under direction of the Signal Service. Text-book, Loomis' Meteorology.

MINERALOGY.

This includes the study of the laws of crystallography, with the properties, forms and uses of the principal minerals of the United States. Blowpipe analysis forms a very important part of the course, each student being required to name and identify a large series of minerals. Text-book, Dana's Mineralogy.

HOUSEHOLD CHEMISTRY.

A course of lectures on this subject is yearly delivered to a class of young ladies. The course embraces the chemistry of cooking; the composition of food; bread; tea, chocolate and coffee; butter and milk; ripening and preservation of fruits, etc.

SPECIAL COURSES

Are constantly in progress in Assaying, Pharmaceutical Chemistry and Photography.

ENGLISH LANGUAGE.

Words are simply tools used to express ideas; and, since the vast majority of our communications are made by the employment of spoken or written words, skill in using them is as profitable to the industrialist as dexterity with the needle is profitable to the seamstress. The direct aim of the course is to make the student skillful and intelligent in handling the machinery called language, just as an engineer handles a locomotive; and no drill will be omitted, or effort spared, to gain this end. Apart from the course itself, which is far more practical and complete than that usually found in literary colleges, the constant attention given this subject by all the departments, and especially the practice required in the printing classes, affords superior advantages to the student.

DRILL IN ENGLISH.

"As grammar was made after language, so ought it to be taught after language."—*Herbert Spencer.*

Drill in English embraces the following topics:

Sounds of the language; drill in producing the vocal, sub-vocal and aspirate elements with accuracy, distinctness and volume; vowels, consonants.

Letters: Form; power; rules for spelling, drill.

Words: Signification, properties, modifications, variations, relation and dependence.

Sentences: Drill in statement of ideas; description, clearness, terseness, vigor; business letters, discussion; capitalization; syllabication; punctuation; construction and analysis of sentences; elements, uses and names; criticism of compositions printed as written; proof reading; grammatical construction; superfluous words and clauses; drill in reading, speaking and penmanship.

Text-books: Webster's Academic Dictionary; Lee & Hadley's Advanced Lessons in Language.

Pupils deficient in spelling, etc., should enter the printing class, the printing-office being the work-shop of language.

STRUCTURE OF ENGLISH.

ELEMENTS OF WORDS.—The end aimed at in this study is to learn everything about words which will aid in their effective use. Among the topics included are:

Roots: What are they; their origin; their force and value as an element of language; the manner of their growth into different parts of speech.

Stems: Their derivation; their offices and properties; their relation to other parts of words.

Prefixes and Suffixes: The several sources whence derived; the relation of their force or significance to those sources; explanation of the laws and principles governing their use along with stems.

Compounds: Their value; their properties and uses; the laws governing their formation.

Synonyms: Definitions; causes of their abundance in English; the principles to be observed in choosing among them, to express a thought.

Criticism: This constitutes a prominent part of the exercises of the pupil through his whole course in the study of English. It not only diversifies and enlivens the class-room exercise, but reduces to practice the principles of the structure of the language. By this means, the student acquires not only a knowledge of English, but readiness and accuracy in speaking or writing it. The exercises in criticism embrace not only examination of selected matter, but original composition.

ELEMENTS OF SENTENCES.—The purpose in view in studying this subject is not to traverse the ground gone over in the study of grammar, but to fix in the mind of the student a clear understanding and remembrance of names, the properties and offices of the several classes of words entering into an English sentence, by showing him the reason of things; to make more simple, as well as interesting and practically useful, a study otherwise "dry and unprofitable" in many cases, by explaining the reason of the verbal forms and changes, the rules and maxims he is to remember and observe in his use of language. In the same manner he is conducted through a study of the mutual relations and dependencies of the several elements making up a sentence.

MATHEMATICAL DEPARTMENT.

Figures and lines, like words, are only instruments with which to convey ideas, or perform operations that cannot be easily done without them. The arithmetical principles used in business are few and simple; but accuracy and rapidity in computation are only gained by practice. College graduates often fail to retain clerkships, not because they do not know *why* given operations are performed, but because they can neither add, multiply or divide with that habitual correctness which renders their work reliable.

DRILL IN ARITHMETIC.

The chief design of this study is to make the student expert in the use of numbers, as employed by the industrialist for profit. The occupation of a successful farmer demands the application of every principle of practical arithmetic, and is taken as a starting point, rather than that of an abstract system. Beginning with a simple cash account, book-keeping is gradually developed to the full extent of its real utility. The areas of fields, expense of crops, construction of houses, sales of produce, and investment of capital, involve all the fundamental operations, and those of profit and loss, commission, taxes, insurance, exchange and stocks. Following this line, the student, so far from hammering away at "pure" science draws from the mathematical store-house what he needs, and sees why he needs it. Accuracy of calculation and posting, rather than a *mere* comprehension of the principles, is aimed at. Besides the recitation-room drill in business forms, practice in the field is also given. Estimating the number of cords in a pile of wood said to be 100x4x4 feet is one thing; measuring a pile of wood through which any number of cats may be harmlessly thrown, and in which four-feet sticks are the exception, is quite another and more difficult thing.

ARITHMETIC AND BOOK-KEEPING

Is a continuation of the above, having the same purpose and adopting such methods as the necessities of the class indicate. Thorough instruction in the principles and forms of business law is given. It will be seen that this method of teaching book-keeping, besides ensuring arithmetical practice, develops practical skill in that important art.

ALGEBRA.

Algebra is included in the course as a preparation for the study of Surveying.

DRAWING.

The practical value of Industrial Drawing can hardly be overestimated, first, because its study is the best drill for the development of the perceptive faculties, which are the ones most employed in daily life; and, second, because the working classes make a far greater use of lines than they do of figures. A farmer follows a line when laying a straight furrow; the carpenter uses the square and rule twenty times as often as he does figures; and a woman in cutting a pattern, or deciding that one bonnet is prettier than another, does so by the line or "form." So that either in its direct application, or in the exercise of that taste which comes from skill in using lines, this branch of mathematics is quite as important as a means of "mental discipline" as is the branch of computation, and is of far greater daily use. The admiral system of Prof. Walter Smith, Art Director of Massachusetts, is thoroughly followed through the grades of Free-hand, Geometrical, Object, Model, Perspective, Mechanical and Topographical Drawing, during the terms indicated by the Course of Study. In addition, constant practice in the application of lines to metal and wood is furnished in the Blacksmith, Carpenter, Turning, Scroll-sawing, Carving, Engraving and Printing shops, and to fabrics in the Sewing Department.

PRACTICAL GEOMETRY.

Not one farmer in a thousand ever uses the transit in surveying his land, the testimony of the county surveyor being decisive in court; but every farmer makes countless applications of lines and angles in laying off fields, roads, gardens, planning houses, determining levels, etc. The object of Practical Geometry is to teach the properties and uses of angles, and to make the student skillful in the application of lines to the field by the use of such simple instruments as are always within reach, or within his ability to construct; and accurate in the transferring of plans to the grounds, board or block.

PRACTICAL SURVEYING.

The drill in the use of figures and lines given by the mathematical course as above indicated, renders the mastery of surveying an easy task. There is no calculation made or formula used by the working engineer which cannot be readily understood and performed by a skillful arithmetician after proper instruction. The hand-book of the engineer is accordingly supplemented with such special guidance as is found necessary for a full comprehension of the mathematical principles and their applications; and extended field practice is required in the use of the compass, level, transit and theodlite.

STUDIES SPECIAL TO WOMAN.

Besides the studies already indicated, attention is called to the following:

SPECIAL HYGIENE.

As shown in the course, one term is devoted to the study of Physiology, from the text-book of Dr. J. C. Dalton. This is followed in the fourth year by a course of lectures to young ladies by Mrs. Cripps on the subject of Hygiene, embracing such instruction in hygienic matters as are valuable to woman.

FARM ECONOMY considers those affairs of the farm which usually come under the supervision of the farmer's wife or daughter, and which are not included in "gardening" or "household economy;" such as butter and cheese-making, dairy management, etc. A course of lectures is delivered by the Professor of Practical Agriculture. See heading, "Farm Economy."

GARDENING is included in Practical Horticulture. See heading, "Landscape Gardening."

HOUSEHOLD CHEMISTRY. See heading, "Household Chemistry."

HOUSEHOLD ECONOMY

Follows Household Chemistry and consists of lectures by Mrs. Cripps in the art of house-keeping, embracing cookery, domestic management, and kindred topics. Many elderly gentlemen sufficiently know, and more young gentlemen will duly discover, that systematic knowledge of how cooking ought to be done is luminously different from the ability to do it. Instruction without practice can effect but little. Accordingly a kitchen laboratory has been completely furnished, and affords every facility for drill in the art of cooking. This drill chiefly differs from that of a kitchen in the respect that after a girl has learned to wash dishes or pare pototoes she is not kept everlastingly at either. After full trial we have found it just as feasible to give this practice, with profit and pleasure to the pupil, as it is to give laboratory practice in chemistry—and no more expensive.

THE INDUSTRIALIST

VOL. IV. MANHATTAN, KANSAS, SATURDAY, NOVEMBER 16, 1878. No. 31.

THE INDUSTRIALIST.

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Address A. A. STEWART, Manhattan, Kas.

INDUSTRIAL EDUCATION.

Not the least of the things of which Kansas has a right to be proud is its magnificent educational system. At the start a wise and vigorous policy was adopted for the education of its youth; and ever since, whether in war or peace, poverty or plenty, the State has steadily developed and carefully fostered its various educational agencies. In addition to its munificent endowment of the public schools, it has provided higher institutions for three distinct kinds of instruction, namely, normal schools for the special training of public school teachers; a university for the education of those proposing to enter the professions of law, medicine or theology; and an agricultural college for the practical education of those who will engage in any of the "industrial professions or pursuits," as distinguished from the "learned professions." The relative demand for the three forms of education is indicated by the proportion in which the citizens of Kansas follow these vocations, as shown by the last United States census. Of every one hundred persons engaged in a vocation by which money is gained, the ratios were as follows:

Normal education:		
Teachers	1.13	= 1.13
Professional education:		
Ministers	0.43	
Lawyers	0.55	
Doctors	0.73	= 1.71
Industrial education:		
In agriculture	59.13	
In manufacturing and mechanical	14.63	
In personal service	13.89	
In trade and transportation	9.51	= 97.16
		100.00

AGRICULTURAL COLLEGE.

Recognizing the need for an education which should especially prepare the rising generations for an intelligent and successful practice of those vocations which are followed by ninety-seven out of each hundred of its citizens, the first institution endowed and put in operation by the State was its Agricultural College, so named because of the fact that agriculture is, both numerically and actually, the chief of these vocations. The title, "Agricultural" College, is apt to mislead those who are not familiar with the above fact, and also with the further fact that the acts of both Congress and of Kansas provide for an "industrial," as distinguished from a "professional" education.

ENDOWMENT.

The endowment received from the United States Government consisted of 81,601 acres of choice land, all of which had been sold at date of last report, except 31,461 acres now on the market. The proceeds from the sale of lands are invested in school bonds, and the securities in hand amounted to $238,101.28 by last report. The annual income from this endowment is about $20,000, out of which all expenses of instruction are paid. The only aid received from the State is for the erection of buildings, in accordance with the conditions of the congressional grant. This is the only one of the State's institutions which is not dependent upon the tax-payer for its maintenance.

LOCATION.

It is situated one mile from Manhattan, Riley county, one hundred and twenty miles west of the Missouri River, in the heart of the finest agricultural State in America. The Kansas Pacific Railway, with its connecting lines, gives speedy communication with every quarter.

COURSE OF STUDY.

The course of study is shaped with direct reference to giving an industrial as distinct from a professional education. It makes the pupil intelligent and expert in the use of the English language; in the use of numbers as employed by the farmer, book-keeper and engineer; and in the use of lines as employed by the carpenter, painter and architect. Words, figures and lines are tools which all men use. It then gives thorough instruction and laboratorial or field drill in the following sciences as essentially useful to an intelligent and successful farmer: Physiology, Practical Agriculture, Natural Philosophy, Botany, Entomology, Practical Horticulture, Landscape Gardening, Inorganic Chemistry, Organic and Analytical Chemistry, Surveying, Geology, Mineralogy, Zoology, Meteorology, Agricultural Chemistry, Political Economy, Practical Law and Logic. It has an equally practical and effective course for the education of woman as a woman, instead of as a man, and as a worker instead of as a butterfly. Then, it has a well-stocked farm and nursery, and well-equipped shops, for giving boys practice in farm and nursery work, and in wood and iron work, and for giving girls drill in dressmaking, printing, telegraphy, carving, engraving and music.

Progressive Farming.

The introduction of improved machinery has not as yet led to a corresponding increase of crops. It has not led to a more thorough culture, or at least to an increase in the annual yield per acre of the cereal crops. In unusually favorable seasons like the present one, we are apt to console ourselves with the reflection that more fruitful seasons are in store for us.

A glance at statistics at once dispels such an illusion, and with an increased acreage we note a steady decline in the average yields in most of the great central States, including that of Ohio. We see on every hand a desire to own adjoining farms, to add to the number of acres, rather than to an increase in the yield. With our improved implements this should not be so. It should be the aim of all, who desire the prosperity of our farm interests, to own small farms; give them the most thorough cultivation possible, as well as to grow a greater variety of crops, so that if one prove a partial or total failure, that the loss will be confined to but one crop, leaving the others from which a revenue may be derived.

Progressive farming means something more than the taking off and putting nothing on process. It implies that we must first find out what the soil needs, and how we can best supply that need by a judicious system of rotation and the economical application of unleached barn-yard, as well as commercial, manures. It also implies a better knowledge of raising and fattening stock; of sheep-raising for mutton or wool, or both combined; of fruit-raising, entomology, agricultural chemistry, vegetable physiology and other kindred subjects.

The progressive farmer, is or should be, one who possesses not only a trained hand, but a well-cultivated brain. He is eminently practical. He reads, reflects and then acts. He can give a good reason for everything he does. He experiments, yet so as to produce profitable results, and cares but little for mere theories unsupplemented by practice. He realizes fully that more scientific and experimental knowledge is needed in the occupation of the farmer than in that of any other.— *Cincinnati Grange Bulletin.*

Stop and Think.

It may be safely assumed that the greatest and most pressing need of agriculture, is that of educated men; that is, for men who have been specially educated for the profession of farming, with the view of following it for a livelihood. Such an assertion as the foregoing, if made only a third of a century ago, would have been met with ridicule. Not so now, for in many of the older States we find that the soils are becoming rapidly exhausted of important elements of plant food; and, worst of all, those who are inclined to begin the renovating process must do so, to a great degree, blindfolded as it were, and thus experiment often at a positive loss.

Earnest study and careful preparation are needed now. The farmer needs to know more than he does of geology, chemistry, botany, veterinary art, as well as many other things.

How it is that so many young men can not see that there is necessity for fully as much careful, studious preparation for the successful prosecution of the profession of agriculture, as for that of any other, we can not see. Because some who have had good educational advantages fail to put their varied acquirements to some practical use, it is no sign that there is not need enough of it.

Young men, before you come to the insane conclusion to abandon farm life for city life, stop and think. Stick to the country. There is no higher position on earth than that of a skillful cultivator of the soil. Educate yourselves by the aid of all the modern appliances in the school of agriculture. Learn a business at which you can make an honest living. Hesitate before taking a step which will but increase the ranks of the thousands who have nothing but a diploma from a commercial school, which in the struggle for existence is now, more than ever heretofore, practically worthless. The food producer, like the blacksmith, who forged the tools with which King Solomon's magnificent temple was built, is the greatest of all, and entitled to the seat on the throne, nay more, to the noblest rank that men can hold.

Parents, make an extra effort to send your sons to an agricultural college, where the model farm is conducted in such a manner as to return a profit. Send them where theory is combined with paying practice in such a way as to insure paying results. The *Kansas Farmer* says with impressive truthfulness, that men are needed to lead and direct the effort which is making throughout this country, to lift agriculture to a plane in the social, scientific and political scale to which it has not heretofore even thought of aspiring. The most promising field, for the next half century, which presents itself for distinction to men of brains and worth, is agriculture. The "professions," which are mainly filled with a class of idle, non-productive schemers, offer little or no opportunity for cultivated, honest worth to reach distinction. Those who struggle in their crowded ranks have come to depend mainly upon trickery for advancement. They are compelled to mine and countermine, and meet the thousand devices of opposing knaves by similar trickery. Agriculture offers to the young man of natural ability the grandest opportunity for the display of his mental powers and a certainty of substantial reward for application and industry, with the sweet consciousness of rectitude and an honorable life. The professions, so-called, offer no such certain results.— *Cincinnati Grange Bulletin.*

From the Eighth to the First.

The marvelous productiveness of the soil of Kansas is the wonder of the world. The youngest almost, among the States, she yet takes rank with the oldest in the amount and the quality of her productions. The N. Y. *Sun* thus advertises our State: "Kansas and California stand side by side in grain crops the present year. From the eighth place as a wheat State in 1876, Kansas jumps to the first place. Her crop of wheat will be 30,000,000 bushels and of corn 100,000,000 bushels."

This is the secret of the wonderful immigration to Kansas. Her unexampled yield of all kinds of crops, her healthy and invigorating climate, and the low figures at which her lands are sold combine to present an array of inducements to the tiller of the soil that no other State can possibly offer. In 1860 our population was about 100,000. It is now fully 800,000, and the State leads all others as a wheat-growing State. But we have only commenced the business of produce growing. There is scarcely a limit to the capacities of our soil for production. The immigration this fall is nearly as large as in the spring. The steady flow will keep right on. By 1880 Kansas will have a population of over 1,000,000.—*Parsons Sun.*

A NEW rope-making material has been found in the fibrous leaves of a New Zealand aloe. The long, tough threads are said to exceed iron wire of the same thickness in tenacity, and they are not affected by immersion in salt water.

The Prospects of Kansas.

Notwithstanding the depression of business which exists in some parts of the country, the prospects of Kansas were never more encouraging than at the present time. All the great railroad lines leading into the State are crowded with those seeking new homes, and the wagon immigration, which has been unusually large all through the year, shows no sign of abatement as the winter approaches. The people of the Eastern States have come to fully appreciate the merits of Kansas as an agricultural State, as our wonderful civilization has advanced to the great plains lying along the eastern line of the Rocky Mountains. The old theories in regard to soil and climate are exploded, and all now understand that even western Kansas is a part of the best agricultural region on the American Continent. Populous counties are being organized in the very heart of the buffalo region of a few years ago, and a large portion of the wheat which now crowds our railroads beyond their carrying capacity, comes from that productive section.

The growth of the State the present year has more than equaled the expectations of the most sanguine, and while the tide has swept into the west with such wonderful rapidity, most of the old counties of the State have made substantial progress. The new people, inspired with the progressive spirit of our cosmopolitan population, are wedded to Kansas at once, and a single year produces changes of the most encouraging character. Our statistics of agricultural production show results which may well incite this great army of immigrants. No other of the new States begins to compare with ours in this regard. If, as now anticipated, the population of the State should reach one million by the census of 1880, the same enumeration will develop results in all the avenues of business, and in agricultural, educational, social, moral and religious development, which will be still more encouraging. Especially should we be proud of our school system, and of the magnificent school fund which will be an eternal patrimony to all the generations of the future. The founders of the State have commenced to rear a monument to education, in this ever-growing fund, which will continue to invite within our borders the progressive nnd the enterprising from all States and nations, and around which the millions of the coming years will rejoice in the glory of increased popular intelligence, and a higher and better civilization.

The facilities for the transportation of our immense crops to market will keep pace with the rapid growth of this State. As time goes on, the mountains of the West will fill up with a large population, and our products will find their way to the mining regions of Colorado, Utah, New Mexico and Arizona, with an increased profit to our people. The Atchison, Topeka & Santa Fe Railroad is already penetrating the southwest in the direction of the Pacific, and also into the rich mineral regions of San Juan and Southern Utah. Before the commencement of the next decade, this enterprising company will have reached a point in Arizona where the Southern Pacific Railroad of California approaches from the west, and Kansas will then be connected by a direct continental line, via the southwest, with the Pacific Ocean. Surely the prospects of the future are of the most encouraging character, and within the lifetime of many of our readers, our beloved commonwealth will not be second in wealth and population to any American State.—*Topeka Commonwealth.*

ENGLAND'S crop of wheat is rated at 11,500,000 quarters, leaving 13,000,000 quarters, or 104,000,000 bushels to be imported.

THE INDUSTRIALIST.

SATURDAY, NOVEMBER 16, 1878.

JNO. A. ANDERSON, Managing Editor.

ASSOCIATE EDITORS, MEMBERS OF THE FACULTY.

Mental Work of Man and Woman.

A moment's thought will show how greatly the average mental work performed by woman differs from that of man, not in quantity or quality, but in nature. Imagine woman reduced to a physical toy, or to a mere operator of machines, would humanity lose anything of intellectual value? Perhaps not a great deal from the departments of medical, legal and theological research; nor from those of philosophy and statesmanship. Likely as many volumes having enough vitality to live a century would be added to these sections of the world's library as now. Perhaps, also, mechanical invention would progress as rapidly, the great streets of the world's commerce be as thronged, and the smoke trails of ships and trains be just as numerous. Something would be missed from the studios of art, those laboratories of imagination, feeling and taste; and much would be missed from the purest, most heartful and ennobling literature of the age. But how about those mental laboratories, vastly more numerous than the combined factories, stores and offices of men, dotted and clustered through the land as the stars in the sky, and as ceaseless in their work as these in their shining? How about the *homes* of the lawyer and scientist, of the manufacturer and merchant, of the banker and farmer? Would these be the same? Would men have the same inspiration in their daily toil? Would the philosopher be as real a philosopher without the smile of his wife? or would the defender of right and assailant of wrong be as brave and enduring were it not for the little eyes that sparkle around the evening table? Would there be as much truth, integrity, virtue, courage, nobility,—as much of God in the world? And yet these things are worth something to humanity; as much, perhaps, as are logical tomes, scientific icicles, or deeds, stocks and coin. These things are woven by the mind and soul of women, as are philosophies by men. It is true that there never has been, and likely never will be, a female Bacon, Newton or Napoleon; but it is equally true that there never has been, and will never be, a male Florence Nightingale, Martha Washington or Cornelia. Because, forsooth, we cannot measure truth with a yard-stick, let us not deny that truth exists; and because we cannot measure woman's mental work by the same gauge that we apply to Bacon, let us not deny either its existence or value. The very fact that we cannot, shows how greatly the intellectual product of woman differs from that of man.

To deny that woman is as much a mental worker as man, is to deny the long, plethoric years of wifely tenderness and of motherly watchfulness, counsel and prayer, without which the world would become a lair of wild beasts. It is not so much her physical work which most endears and makes hallowed the name of mother: that serves only as a goblet into which the mental, moral and affectional forces of her whole life distilled a spirit nearest like that of deity; and we instinctively lift it to our lips in moments of worship, when wealth, fame and ambition seem as profanities. The greater our distance from childhood the more clearly we see how different in its nature is the mental work of the mother from that of the father. And the more thoroughly we analyze the intellectual labor performed by woman in all her relations, the more apparent will be its difference from that of man. Men may fancy that they do a given thing as a woman would, but any bevy of girls could easily demonstrate and enjoy the absurdity of the fancy.

Women and Politics.

We hear very many ladies say, "I don't know anything about politics." This is a lamentable fact. When there are so many avenues open for the enlightenment and general instruction of women, and when the public is calling for intelligent women, posted on the common issues of the day and possessing a knowledge of parliamentary usages and assembly regulations, I am not only surprised but grieved over the thoughtlessness of my gentle sisters; too genteel even to attend instructive lectures, delivered by men honored by the State and highly esteemed by the people,—such men as our worthy College President and honorable Governor. At other gatherings in this same hall, there is no lack of the presence of ladies, bestowing their most genial smiles upon their gentlemen friends; and their delighted and most attentive ear is lent to the slang and slum of a popular clown in some one-horse theater. Consistency, thou art a jewel! Dear sisters, we ought to be able to tell our boys the difference between a Democrat and a Republican, also between currency and fiat money, and be ready to answer a thousand other questions they are sure to ask their mothers. Why, there are hundreds of weeping mothers to-day who cannot tell why their darling sons are sleeping in soldiers' graves. Now, if I am ever called upon to give my boy to my country, I shall earnestly desire to know why my country demands the gift, so that I can make an intelligent sacrifice. I could but laugh the other day to hear some ladies solve the question of fiat money. Said one: "What is fiat money?" "Well," said another, "I don't know, unless it means those big ninety-cent dollars." The third lady, thinking she was capable of explaining the whole matter, spoke up: "Why, it is all *fight* money, I think; for John and I have a fight every time I ask him for a quarter." It is plain that such ignorance would not prevail if the ladies had heard President Anderson's speech, for he showed up fiat money in its true light.

But some will say women can read all they need to know. Do men satisfy themselves with reading? I answer, No. The more they read the more anxious are they to hear a good speech upon the topic in hand. Some women seem to fear that if they were seen at a political meeting they would surely be unsexed, and expect that soon the men would snatch them up to the polls (because they are in the habit of snatching every one up to the ballot-box that they can get hold of), and thus cause them to perform that very unlady-like act — to vote. "Let not your hearts be troubled," you will never be forced to vote, for voting does not follow information. Suffrage has not yet assumed an educational basis. No doubt our country would be better off to-day were that the case.

Politics and political speeches are not the dirty things that the feminine part of the populace has been made to believe; so let us in the future give them more attention, not particularly with an eye to the ballot-box or to the presidency of the nation, but purely for developing the mind and thus fitting ourselves to be what we most desire — intelligent and suitably interesting companions for our gentlemen friends. We can each be useful in some humble way, to be sure; but if we cultivate all the faculties we have and educate ourselves up to our highest privileges, we certainly will be much better prepared to take up the new and multiplied duties that are constantly devolving upon women of the present day.

Let me say to the girls of the age that it is not indelicate to study politics and the principles governing our nation. We must not think they are the filthy pools so often referred to, since such men as President Anderson and others of our good townsmen are mingling in them. I for one am less afraid of them than ever before. I would much rather my girls should be found listening to a public lecture that will teach them the ills and dangers of our much-loved country, and the ways for the old ship of state to avoid the shoals and breakers ahead, than for them to be exposing their finely-formed feet to some worthless dancing-master, who will be sure to teach them many vain and contaminating things not best for them to know.

In closing these kindly remarks, allow me to say to my lady friends: Be consistent in all your incomings and more especially in your outgoings. Whenever and wherever you can, "hear instruction and be wise."—*Mrs. Jennie S. Platt.*

How to Select a Farm.

In the selection of a farm, there are many points to be considered. In the outset, our choice as regards size and location must be determined by the amount of capital we have to invest, and the system of farming we intend to pursue. If one has little beside his labor, he must either be contented with a small farm or go where land is cheap. But, be his capital great or small, he must, in all cases, allow a portion of it for improvements and tools necessary to commence a system of production, or he will labor under great disadvantages. One may add to his improvements from year to year as returns from the farm afford means, but in no case should he, in order to possess a large farm, invest his all, leaving nothing to invest in improvements, machinery, or the comforts of life.

We should select a farm with a view to practicing mixed husbandry; it being, in a State like this where markets are remote and unreliable, the most profitable system of farming.

In selecting a farm, we should have reference to natural advantages for keeping live stock; the points to be considered being shelter, water and grazing lands. Some of the most desirable farms in Kansas are situated on small streams, fed by never-failing springs. These streams furnish protection and water for all kinds of stock, thus giving the owners a great advantage over those who are obliged to depend entirely upon wells and shedding for their stock. Small streams possess many advantages over large, as the inconvenience of having our farm divided by a river is very great, and there is also greater danger of overflows, in which fences and oftentimes grain and stock are washed away. A moderate amount of rich farming land is desirable. We would prefer bottom lands, especially for raising corn, which must be the chief product for home consumption. It is argued by some that, in Kansas, uplands are preferable to low lands, but the increased fertility of the latter over the former we think more than covers the disadvantages which bottom lands possess.

We should if possible select with reference to the probable convenience of wide range, but the rapidity with which our State is being settled forces us, in most cases, to make permanent provision for pasture lands. This we may do by the cultivation of tame grasses, or, as many have done, by purchasing cheap grazing lands adjoining the farm proper.

With respect to the locality, we should consider the probable future as well as present surroundings of our farm. Nearness to markets should influence us to a great extent in the choice, as the cost of hauling grain or hogs twenty miles to market, as many Kansas farmers are now obliged to do, deducts heavily from the profits.

We have thus far considered the farm simply as a money-making machine, but in selecting with reference to a permanent home there are many other considerations, social, moral and religious, which demand our attention. Healthfulness of the climate and character of the neighbors must also affect our choice. Upon the intellectual and moral condition of a community will depend largely security to property and personal rights, also the efficiency of labor which we must employ. These and other conditions make it advisable that we should look well into the general character of a people before settling in their midst. S.

THE INDUSTRIALIST.

SATURDAY, NOVEMBER 16, 1878.

The students begin to think of Christmas, of going home, and of that turkey dinner which follows.

The students' prayer-meeting on Friday evening is quite well attended, and a commendable interest is manifested.

The customary Union Thanksgiving services will be held this year in the Episcopal Church. Rev. J. H. Lee will preach the sermon.

Joe Williamson says it's all a mistake; he isn't married. He says they are going to have a big time down there on Christmas, but that we should keep "mum" about it. We will.

The marriage of the venerable Dr. Phelps, on last Sunday evening, was a surprise to everybody. The bridegroom is only eighty-five—just in the prime of life, and the happy bride is twenty-eight.

The plasterers are crowding their work on the new building as fast as possible. If the weather continues favorable, they will get through in two weeks. There is not much doubt about the building being occupied next term.

The Board of Regents held its regular quarterly meeting this week. All the members were present, and the session was a very pleasant one. A large amount of business was transacted. The several departments made known their wants, and such appropriations were allowed as the funds of the College would permit.

Mr. Ed Hunting has been employed to take Mr. Davis' place as janitor of the College. He has been doing the work for several weeks, and seems to give general satisfaction. Mr. Hunting expects to occupy rooms on the College grounds, so that he can watch the buildings night and day, and thus guard against accidents of all kinds.

An effort is being made in Manhattan to build a public hall. We know of nothing which she needs so badly. It is proposed to organize a joint stock company, and allow subscriptions to be paid in labor, material or cash, thus enabling all classes to assist in the erection of and own shares in this new building. We trust that the effort may prove successful.

Mr. S. A. Hayes has been employed to take charge of the blacksmith shop at the College, and give instructions in that "industrial" to those students who desire it. He works only the first half of each day for the College, and purposes spending the afternoons and Saturdays in doing a general custom business, from which the College derives no benefit, directly or indirectly. Mr. Hayes has made a specialty of horse-shoeing for several years, has shod many fast horses, and understands all kinds of veterinary shoeing. We hope the people of Manhattan and the farmers near by will come and examine some of his work, and at least give him a trial. See advertisement.

Friday afternoon, November 8th, the Alpha Beta Society convened as usual. It was decided by the debate that indorsers on promissory notes should receive a commission for the services rendered. The first part of the *Gleaner* was then presented by Wm. Griffing. We were pleased by a mock description of the late joint session. This part of the paper was followed by music, when the second half was read by Miss Campbell. Among the articles in this we remember one headed, "A Trip to the College," which spoke quite highly of us and the College in general.

The paper was followed by extemporaneous speaking. Several graduates were present and took part in this exercise. Committee on arrangements for moot-court, reported progress. The trial takes place in two weeks, the subject matter being the case of a young student whose livery team ran off and smashed the carriage, and he is prosecuted by the owner of the team for damages.

Question to be debated at the next meeting: "*Resolved*, That laborers do not receive a full equivalent for their services." Affirmative, Blain and Humphrey; negative, Sikes and Ulrich. Mr. Chenoweth and Miss Browning will present the *Gleaner* in three weeks. "Surely we progress."

S. H. W.

ATTRACTIVENESS.

Attractiveness consists at least in one of six things, and if all are combined we have attractiveness in a high degree. The first requisite necessary to make a person attractive is natural constitution. With proper care all can have good health. Some, of course, are, to a certain degree, naturally delicate, owing to the fact that they inherit it from their parents, but by careful study of themselves and the general laws that govern health, even they can to a great extent remedy this and enjoy comparatively good health. The second requisite is health itself. The question might now properly be asked, "How shall this be maintained?" In reply I would say, study yourself so carefully that you will know what will give you good blood, as that is the life of our bodies, and also how to keep the different parts of the body in the best condition for appropriate use. For good blood, we all know that we must have plenty of fresh air, pure water, and good, substantial food, taken at regular hours. Third: Always manifesting a desire to please. By this I mean acting at all times in the most agreeable manner which our sense dictates. For instance, if we meet with anything which is very disagreeable to us, but to our companions it may be pleasing, we should strive to avoid any actions or words which would make it unpleasant to them. This I admit will not at all times be the most convenient thing to do, but we must ever remember the maxim, "If at first you don't succeed, try, try again." Fourth: Upon proper emotions, or a good disposition. Upon this depends the greater part of our happiness. Thus, if we are inclined to be fretful and cross, and have only self in view, we make ourselves and those around us unhappy, and the result is that we are shunned by our most intimate friends. Fifth: Intellectual culture. This adds greatly to the attractiveness of a person; for by the aid of education we are enabled to converse fluently on all subjects of interest, and in various other ways to make our lives pleasant. Sixth: Graceful movements. Very little need be said about this, for we all know that if one has a fine figure and her movements are not graceful, it detracts from the beauty of that figure; and, on the other hand, if one has not a graceful figure and her movements are graceful, they will to a great extent tend to remove or hide it. These six requisites, combined with good common sense, cannot fail to receive the commendation of all and make the person attractive, I care not what the face may be.

A.

The following article is taken from the *Gleaner*, a paper published semi-monthly by the Alpha Beta Society. It is a humorous report of the joint session which the two societies held a few weeks ago, and is well worth reading:

The house was called to order by a young man whose most striking feature was a very black mustache. The first thing on the programme was a speech by a delicate-looking youth from the Webster family. It wasn't either Noah or Daniel, although he bore a striking resemblance to both. The principal thought he advanced was that every one should get an education and become President. After he had taken his seat, twenty of our best-looking students piled upon the platform. Immediately a mighty Mann arose before them, having in his right hand a diminutive telegraph pole which he swung in a very careless manner; and every time he struck at the students the ladies squealed and the gentlemen hallooed. This was kept up for some time.

After the house became quiet, the question was called for. It read: "*Resolved*, That the Constitution of the United States should prohibit all foreigners the right to vote until they have resided in the United States ten years." The first speaker was a square-built, angular youth, with a flowing stand-up collar. He read from a little book that foreigners under ten years of age should not vote. The next speaker, with a much smaller body but with a noble brain, contradicted him; but may be that was because he read from a different book, which urged strong and unanswerable reasons why they should vote. The next speaker, a very tall youth, decked with a red rose on his coat collar, and a delicate pair of burnsides, after unfolding the full length of himself, read from his book a short sketch of Peter Johnson; also made the statement that the Irish should not vote because they hated "niggars" and loved the Pope. After a few more remarks he wilted. Next came a round-faced, sandy-haired young man, with more thunder and lightning in him than in all the rest put together. Bracing his back with his left hand, he laid down the law out of his little book with the other, until it became exhausted, then he collapsed. The first speaker again took the floor and contradicted all the statements made by the opposition. His opponent immediately arose, made some cutting remarks about the first speaker's unusual size, and suggested that the sooner he got some one to assist in taking care of him the better. The judges being called to decide the question at point, gave a verdict according to the arguments of the last speaker.

Next came a very pretty song about a beautiful home, after which a spirited declamation was commenced by a stripling whose voice had in it the unmistakable accent of the gosling. He had uttered but a few words when he was interrupted by a monster-voiced fellow who commenced bellowing forth an oration with the intention of drowning the little one's speech. But the little one was plucky and a lively "set-to" commenced with the odds in favor of the bass voice. The scene was becoming exciting, when a student with a pair of amber burnsides stepped upon the platform, and in piteous tones began wailing out the fate of that noble youth who stood upon the burning deck. He was soon followed by another student, and the scene which then ensued baffles description. As soon as the President could be heard, a recess was announced.

After recess the right-hand barrel of the *Gleaner-Reporter* was discharged by a festive-looking youth, and the left-hand barrel by a young lady. Each barrel seemed to produce a good effect. Then was repeated the performance of that mighty Mann and his twenty students. The closing address was delivered by the President of the Alpha Betas.

NATIONALIST ITEMS.

A man lost part of his foot by having the train run over it, in his attempt to jump on the cars, on Wednesday A. M., while the train was in motion.

The carpenters have commenced work on E. B. Purcell's Elevator (Improvement Loan and Trust Co.'s Elevator), on Wyandotte avenue, and things are looking lively about there.

C. P. Blachly's case of stuffed birds and animals—all killed within ten miles of Manhattan—is a rare collection. If we were rich he would sell it or refuse a big price.

We went through the new school-house and over the grounds a few days ago, and are certain there is not a finer school park in Kansas, or a better school-house. We are growing proud of Manhattan.

J. H. Barnes having resigned his position as agent of the Grange store, John A. Allen has been elected to succeed him. Mr. Allen is an honorable, clear-headed man, has been raised in this vicinity, and has many friends and few enemies. We do not know that he has had any mercantile experience, but, if faithful attention to business will insure success, he will succeed. One thing is certain, he will cheat nobody—neither his employers nor his customers.

DIRECTIONS TO APPLICANTS.

TERMS OF ADMISSION.

Candidates for admission must be fourteen years of age, and pass a satisfactory examination in reading; arithmetic, through decimal fractions; and English grammar, to syntax. Classes are started at the beginning of each year in Drill in Arithmetic and Drill in English; and the pupil must have the knowledge above indicated, else he will be unable to retain position if admitted.

Pupils will be received at any time during the year, if able to pass an additional examination upon the subjects studied by the classes which they expect to enter. But they will find it greatly to their advantage to be present at the opening of each term, or as soon thereafter as posssble.

GRADES.

Both the Literary and Industrial recitations are graded daily upon a scale of 100; and an examination of all classes is made at the close of each month. A student not attaining an average grade of sixty is promptly dropped to a lower class, or excluded from the Institution until able to do so. The work of grading is strict and uniform in all the departments, and this process is rigorously used for sifting out incompetent and indolent pupils; thus more than accomplishing all that is designed to be effected by a "high standard of admission." Hence, the student's continuance in the College wholly depends upon his own action.

The course is based upon the determination to make the labor required in the preparation of one industrial and three literary recitations as much as the average student can perfectly perform, in ten hours a day. We design to give the pupil the worth of the time expended at College; and, in order thereto, he must do a full day's work with brain or hand. Only those students who can maintain a standing of ninety in each study will be allowed to take more than the prescribed number of recitations; and no one will be permitted to have less than one industrial and three literary recitations.

RELIGIOUS.

Unless otherwise directed by parents, students are required to attend chapel at 8:30 A. M. on academic days, and divine service once every Sabbath.

EXPENSES.

There are no charges whatever for enrollment, attendance or instruction in the regular courses; nor are there any "contingent fees" for the repair of buildings, for the use of books or apparatus, for diplomas, or the kindred privileges usually grouped under the term "contingent." Male students are furnished instruction, the use of apparatus, instruments or tools, in both the literary and industrial classes marked out for them, without any charge. And the same is true of female students in the regular classes provided for them. Printing and Telegraphy are industrials primarily provided for the education of female students, and male students taking either of these are charged $1 per month for use of instruments.

Instrumental music is a fine art or "accomplishment," rather than a mechanical art. We do not place it among our "industrials" in the same sense, or for the same purpose, that we do those provided for teaching the trades. Accordingly, a fee of $12 per term, or seventy-five cents per week is required from female students for tuition and the use of pianos or organs.

The only charge made for material in either the literary or industrial departments is for the chemicals used by students in laboratory practice, which are furnished at wholesale prices, and amount to but a small sum.

Furnishing an absolutely free education is as much as can be reasonably asked; and the Institution neither boards, clothes, nor supplies the student with text-books. Boarding can be obtained in private families at from $2.75 to $4 per week. Washing costs from seventy-five cents to one dollar per dozen. Text-books, which can be procured in Manhattan, cost from $2 to $5 per term.

No student need expend over $5 per week; and many of our best pupils are living at $1.25 per week. Students desiring to "board themselves" can do so at from $1 to $2 per week. In a club of four young men, renting a house, the average cost to each for the term was $1.11 per week.

LABOR.

Manual labor by the students may be for either of two purposes: First, to acquire skill in a given art; second, to earn money. In the first case, the labor is educational; in the second, it should be paid for by the party benefited.

Educational Labor.—Manual labor in the recitations of the Industrial Departments, like mental labor in those of the Literary Departments, is purely educational and will not be remunerated. While the interest of the student will be held paramount in the direction of this labor, the practice necessary to dexterity will be required.

Remunerated Labor.—When the Institution needs labor on the Farm or elsewhere which is not educational, but simply for its own profit, and which a student is able and willing to perform, it becomes an employer instead of a teacher, and he an employe instead of a scholar. It pays for work, he works for pay. The relation between them is commercial, not educational; and both parties must act upon business principles. Hence, the College furnishes only such employment as its own interests require, and will pay according to the value of the service rendered at from seven to ten cents an hour.

AMOUNT EARNED.

It is impossible to predict how much a given person can earn, since that depends upon what he can do and what work there is to be done. Hence, it is wholly impossible for us to answer the question so often asked: "Do you think I can meet my expenses by work?" Some students make one-half their expenses, some the whole, and exceptional men have made more than expenses. As a rule, a faithful boy skilled in farm work can earn half his expenses on the Farm or in the Nursery. During the year he can ordinarily acquire sufficient skill in the wood or iron shops to enable him to make articles for sale. The whole question is one for his own consideration and decision. We can teach all who come, but cannot absolutely *promise* anything more. Hitherto we have refrained from holding out strong inducements respecting the amount of labor we might have to offer; but in view of the fact that during each of the last three years we have had more to do than the students could perform, we are inclined to give greater and positive encouragement on this point. Any boy who is in dead earnest, who is familiar with farm operations, and who can raise $50 to start with, should be able to carry himself through the four years' course. And certainly this places an education within the reach of every determined boy. As yet we are unable to offer similar advantages to girls, not requiring labor in the College departments which they can perform.

RULES.

1. Behave as a true man or woman should, at all times and in all places.

2. Attend to your own business promptly, thoroughly and courteously; and vigorously let alone that of other people.

3. Penalty: "Leave!"

PUBLICATIONS.

The "Hand-Book," published in 1874, containing a full discussion of the educational question and the aims of the Institution, will be forwarded to any one desiring it.

THE INDUSTRIALIST, a weekly journal edited by the Faculty and published by the Printing Department, contains original and seasonable articles on the Farm, Orchard, Trades, Sciences, and Education. Price, 75 cents a year. Address A. A. Stewart, Manhattan.

CALENDAR.

Fall Term 1878.—Begins Wednesday, September 4th, and closes Wednesday, December 20th.

TO NEW STUDENTS.

Bring the text-books you have been using. On arrival, first arrange for your boarding. A. A. Stewart, Sup't Printing Department, will furnish information, either by letter or on application, concerning boarding places or rooms for rent. Report to the President at 8:30 A. M., immediately after chapel, for enrollment.

For further information apply to Jno. A. Anderson, President, Manhattan, Kansas.

LITERARY SOCIETIES.

ALPHA BETA.—Chartered, December 26th, 1870. Meets in College building every Friday at 2 P. M. Ladies admitted. New students cordially invited to attend. C. J. REED, President.
MISS MARY CLARKE, Secretary.

WEBSTER.—Chartered, January, 1871. Meets in Telegraph Hall every Saturday evening. Visitors, especially students, always welcome.
C. M. HULETT, President.
H. C. RUSHMORE, Secretary.

RAILROAD TIME-TABLE.

KANSAS PACIFIC RAILWAY.

PASSENGER ARRIVES.

No. 2, going East	11:45 A. M.
No. 4, going East	3:47 A. M.
No. 1, going West	4:40 P. M.
No. 3, going West	4:35 A. M.
No. 9 (freight), going West	8:45 A. M.

Nos. 1 and 2 run daily; Nos. 3 and 9 run daily except Monday; No. 4 runs daily except Sunday. Passengers with tickets are carried on No. 9.

GEO. C. WILDER, Agent.

METEOROLOGICAL RECORD.

Condensed by Prof. Failyer from the observations taken at the State Agricultural College, for the week ending November 14th, 1878. Latitude, 39°12′; Longitude, 96°40′; Height, 1,200 feet.

DAY OF WEEK AND MONTH.		Temperature. Max.	Min.	Mean.	Bar. Mean Hight.	Inches of Rainfall.
Friday	8	56°	32°	42°.25	29.00	
Saturday	9	50	38	45 .75	28.72	.30
Sunday	10	55	38	47 .50	28.53	
Monday	11	46	33	39 .50	28.80	
Tuesday	12	62	28	44 .25	28.74	
Wednesday	13	59	29	44 .75	28.74	
Thursday	14	51	39	41 .75	28.83	

Average temperature for the week, 43°.68.
Range of temperature for the week, 34°.
Rainfall for the week, .30 inches.

KANSAS STATE AGRICULTURAL COLLEGE.

FACULTY.

J. A. ANDERSON, *President, Prof. Political Economy.*
M. L. WARD, *Prof. Mathematics and English.*
G. H. FAILYER, *Prof. Chemistry and Physics.*
E. M. SHELTON, *Prof. Prac. Agricul., Sup't Farm.*
H. E. VAN DEMAN, *Prof. Botany and Horticulture.*
J. E. PLATT, *Prof. Elem'y English, Mathematics.*
JNO. D. WALTERS, *Teacher Industrial Drawing.*
HON. D. J. BREWER, *Lecturer on Practical Law.*
T. T. HAWKES, *Sup't Mechanical Department.*
A. A. STEWART, *Sup't Printing Department.*
W. C. STEWART, *Sup't Telegraph Department.*
MRS. M. E. CRIPPS, *Sup't Sewing Department.*
W. L. HOFER, *Teacher of Instrumental Music.*

INDUSTRIAL EDUCATION.

The real value of an education to the student depends upon two things: First, the practical worth of the knowledge taught; and, second, the degree in which he makes it his own. Hence, the ability of any institution to give a practical education depends upon the kind and aim of the knowledge it teaches, and upon the thoroughness of the instruction therein. The State Agricultural College was directly endowed by Congress, and is guided by the State, for the specific purpose of furnishing to the industrial classes of Kansas a "practical" education, that is, "one fit for use." As its name indicates, and as the statistics of the industries of the State require, its chief work must be that of giving a useful and usable education to those who will engage in farming; and, therefore, the Farmer's Course must, from the nature of the case, be its main one.

FARMER'S EDUCATION.

Words and figures are merely instruments with which to record ideas. They are not themselves ideas, nor should they be made the chief end of an education. As a wagon is necessary to haul grain, so are they a necessary part of an education; but as the wagon is not the grain, so they are not the knowledge which the farmer converts into money. Hence, the classics and higher mathematics are not taught. But it will be noticed in the following course that so soon as the pupil acquires working skill in the use of the English language as a tool, and of figures and lines as mathematical tools, those arts and sciences which present knowledge that has a cash value to the farmer are taught as rapidly as their importance and thorough acquisition will permit. Studies numbered (1) and (4) in the second, third and fourth years are the spine of the course, to which the others are as ribs and muscle.

FARMER'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Practical Agriculture (advanced.)		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit. Economy, Practical Law.		3. Practical Geometry.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. Practical Agricul. (elementary).		4. English Structure.	
5. Agricul. Chemistry, Meteorology.		5. Organic, Analytical Chemistry.		5. Physics.		5. Adv'd Arithmetic, Book-keeping.	
6. Logic.		6. Practical Surveying.		6. Industrial Drawing.		6. U. S. History, Industrial Drawing.	

WOMAN'S EDUCATION.

Nearly one-half of our students are females, and the Woman's Course is prepared expressly for their liberal and practical education. We have no doubt whatever that practical men and women, who understand what it means and what it seeks to do, will fully endorse it.

WOMAN'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Farm Economy, Special Hygiene.		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit'l Economy, Practical Law.		3. Industrial Drawing.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. English Literature.		4. English Structure.	
5. Phys'l Geography, Meteorology.		5. Organic, Household Chemistry.		5. Physics.		5. Adv'd Arith., Book-keeping.	
6. Logic.		6. Household Economy.		6. Industrial Drawing.		6. U. S. History, Industrial Drawing.	

MECHANIC'S EDUCATION.

Because of the adaptedness of the leading course to the wants of the intelligent mechanic, it has been found practically unnecessary to diverge from the Farmer's Course. Additional studies, specially adapted to the mechanic's use, will be furnished in a Post-Graduate's Course.

If it be urged that the distinctively agricultural knowledge taught in the Farmer's Course is not directly valuable to the mechanic, we reply that, admitting the point for the purpose of argument, yet: 1. This knowledge is of more practical value to the mechanic than is the Latin, Greek, or a half dozen other things embraced in the usual course preparatory to the professions; 2. That the great majority of Kansas mechanics will also be more or less engaged in agriculture; 3. That those studies in the course which are directly valuable to the mechanic, together with the shop facilities, offer a better mechanic's education than can be elsewhere found west of the Alleghanies.

INDUSTRIAL DEPARTMENTS.

Having knowledge in the head is one thing; ability to use it with the tongue, fingers or feet is quite another thing. Both are vital to success in practical life. A man might thoroughly understand the theoretical principles of carpentry, and yet, not having used the tools, be wholly unable to earn carpenter's wages. So in all other vocations. Accordingly, instruction is given in the following well-equipped Industrial Departments, and every student is required to recite in some one of them, as selected by the pupil or parent:

FOR MALE STUDENTS.	FOR FEMALE STUDENTS.
The Farm.	Dress-making.
The Nursery.	Printing.
Carpentry.	Telegraphy.
Cabinet-making.	Scroll-sawing.
Turning.	Carving.
Wagon-making.	Engraving.
Painting.	Photography.
Blacksmithing.	Instrumental Music.

Each of these departments is conducted exactly as in daily life, and aims to give precisely the drill received by an apprentice. No charge is made, either for tuition or material, from male students taking the Industrials provided for them; nor from female students taking the ones provided for them, except in the Department of Instrumental Music. Male students taking either Printing or Telegraphy are charged $1 per month for the use of material and instruments.

DEPARTMENTS OF INSTRUCTION.

DEPARTMENT OF AGRICULTURE.

PRACTICAL AGRICULTURE.

Second Year:—General principles of breeding; history and characteristics of breeds; adaptation of different breeds for special purposes and localities; implements of simple tillage; mechanical principles involved in their construction; action of the plow upon soil and subsoil; principles of draught; influence of different adjustments upon draught; use of the dynamometer; value of hoed crops in a system of husbandry; the cultivation of corn and roots; soils that need drainage; how to lay out a system of drains; house drainage; sewerage.

Fourth Year: General view of agriculture, ancient and modern; agricultural progress of the last century; relative advantages of mixed husbandry and special farming; the selection and arrangement of the farm with reference to the system to be pursued; rotation of crops; general advantages of a rotation; the best rotation with reference to disposition of labor, production of manure, and extermination of weeds; pasturage and production of grain and forage crops; manures, how best housed and applied; composting manures; commercial fertilizers; systems of feeding; stall feeding; steaming food; soiling; experiments in feeding; farm buildings; farmhouses; barns.

FARM ECONOMY.

Woman's Course, Fourth Year: Dairy products as human food; influences affecting character of milk; manufacture of condensed milk; the factory system and household plan of cheese-making; treatment of rennet; general process of cheese manufacture; subsequent treatment of cheese; butter-making; creameries; "deep" and "shallow" setting systems; general process of butter-making; packing and preserving butter.

DEPARTMENT OF BOTANY AND PRACTICAL HORTICULTURE.

This department embraces a course of instruction in the elements of botany, structural and systematic, with a constant attention to the practical application of botany to the farm, orchard, garden, nursery and forest; also a course of lectures on Landscape Gardening. The instruction is mainly given by lectures, accompanied by regular practical drill in all the work of the fruit, vegetable and flower gardens, nursery, orchard, vineyard and ornamental grounds.

The lectures in Practical Horticulture embrace the following and kindred subjects: The relation of atmospheric motion, moisture and temperature to horticulture; seeds, the means of collecting and preserving; propagation, by seeds, cuttings, layers, suckers, grafting, budding; care of young plants; improvement of varieties; management of commercial and farm nursery; modes of pruning; the orchard; fruit suitable for orchard and garden culture; the flower, vegetable and fruit garden; importance and mode of forest culture; shelter belts and their influence; weeds and useful plants; noting the species of trees worthy of culture, either for profit or ornament.

LANDSCAPE GARDENING.

The lectures on Landscape Gardening not only unfold the accepted principles of the art, but at the same time give special attention to such applications of the art as may be made universally available in laying out and improvement of farms and the homes of the people. These lectures are accompanied by a practical drill in in the work of laying out and plotting grounds topographically.

CHEMICAL DEPARTMENT.

PHYSICS.

This includes a full consideration of the laws of mechanics, of liquids, gases and vapors, weights and measures, and specific gravity, followed by experimental study in the Physical Laboratory of the laws of heat, light, with spectrum analysis, electricity and magnetism, and the relation of these forces to plant and animal life. Text-book, Ganot.

INORGANIC CHEMISTRY.

This course is opened with a careful study of chemical forces and the laws governing chemical combination. The elements, with their compounds, are next considered in succession as to their history, properties, manufacture, and especially with regard to their uses on the farm and in the arts. These lectures are accompanied by an extended course of laboratory practice in which each student performs every experiment with his own hands. Text-book, Eliot & Storer.

ORGANIC CHEMISTRY.

This comprises a thorough study of the chemistry of the organic compounds, the composition of plants and of the various compounds derived from them. Constantly accompanied by laboratory practice.

CHEMICAL ANALYSIS.

In this course each student is furnished his stand in the Qualitative Laboratory, completely furnished with apparatus and chemicals for his own use. He here performs analyses of farm soils, plant ash, commercial manures, ores, mineral waters, commercial compounds, etc. After completing this course, he enters, if he desires, the Quantitative Laboratory, where he pursues a full course in quantitative analysis. Text-book, Kedzie's Manual.

AGRICULTURAL CHEMISTRY.

This includes a thorough consideration of the application of chemical principles to the economy of the farm; the origin and formation of soils; the classification and composition of soils; the analysis of soils and their adaptation to purposes of production; the composition and use of manures; composting; chemistry of farm operations, such as plowing, fallowing, draining, etc. Text-book, Johnson's "How Crops Feed."

METEOROLOGY.

Embracing the composition of the atmosphere; atmospheric pressure; temperature and humidity; laws of storms; rain, snow and atmospheric electricity. A full course in meteorological observations is taken under direction of the Signal Service. Text-book, Loomis' Meteorology.

MINERALOGY.

This includes the study of the laws of crystallography, with the properties, forms and uses of the principal minerals of the United States. Blowpipe analysis forms a very important part of the course, each student being required to name and identify a large series of minerals. Text-book, Dana's Mineralogy.

HOUSEHOLD CHEMISTRY.

A course of lectures on this subject is yearly delivered to a class of young ladies. The course embraces the chemistry of cooking; the composition of food; bread; tea, chocolate and coffee; butter and milk; ripening and preservation of fruits, etc.

SPECIAL COURSES

Are constantly in progress in Assaying, Pharmaceutical Chemistry and Photography.

ENGLISH LANGUAGE.

Words are simply tools used to express ideas; and, since the vast majority of our communications are made by the employment of spoken or written words, skill in using them is as profitable to the industrialist as dexterity with the needle is profitable to the seamstress. The direct aim of the course is to make the student skillful and intelligent in handling the machinery called language, just as an engineer handles a locomotive; and no drill will be omitted, or effort spared, to gain this end. Apart from the course itself, which is far more practical and complete than that usually found in literary colleges, the constant attention given this subject by all the departments, and especially the practice required in the printing classes, affords superior advantages to the student.

DRILL IN ENGLISH.

"As grammar was made after language, so ought it to be taught after language."—*Herbert Spencer.*

Drill in English embraces the following topics:

Sounds of the language; drill in producing the vocal, sub-vocal and aspirate elements with accuracy, distinctness and volume; vowels, consonants.

Letters: Form; power; rules for spelling, drill.

Words: Signification, properties, modifications, variations, relation and dependence.

Sentences: Drill in statement of ideas; description, clearness, terseness, vigor; business letters, discussion; capitalization; syllabication; punctuation; construction and analysis of sentences; elements, uses and names; criticism of compositions printed as written; proof reading; grammatical construction; superfluous words and clauses; drill in reading, speaking and penmanship.

Text-books: Webster's Academic Dictionary; Lee & Hadley's Advanced Lessons in Language.

Pupils deficient in spelling, etc., should enter the printing class, the printing-office being the work-shop of language.

STRUCTURE OF ENGLISH.

ELEMENTS OF WORDS.—The end aimed at in this study is to learn everything about words which will aid in their effective use. Among the topics included are:

Roots: What are they; their origin; their force and value as an element of language; the manner of their growth into different parts of speech.

Stems: Their derivation; their offices and properties; their relation to other parts of words.

Prefixes and Suffixes: The several sources whence derived; the relation of their force or significance to those sources; explanation of the laws and principles governing their use along with stems.

Compounds: Their value; their properties and uses; the laws governing their formation.

Synonyms: Definitions; causes of their abundance in English; the principles to be observed in choosing among them, to express a thought.

Criticism: This constitutes a prominent part of the exercises of the pupil through his whole course in the study of English. It not only diversifies and enlivens the class-room exercise, but reduces to practice the principles of the structure of the language. By this means, the student acquires not only a knowledge of English, but readiness and accuracy in speaking or writing it. The exercises in criticism embrace not only examination of selected matter, but original composition.

ELEMENTS OF SENTENCES.—The purpose in view in studying this subject is not to traverse the ground gone over in the study of grammar, but to fix in the mind of the student a clear understanding and remembrance of names, the properties and offices of the several classes of words entering into an English sentence, by showing him the reason of things; to make more simple, as well as interesting and practically useful, a study otherwise "dry and unprofitable" in many cases, by explaining the reason of the verbal forms and changes, the rules and maxims he is to remember and observe in his use of language. In the same manner he is conducted through a study of the mutual relations and dependencies of the several elements making up a sentence.

MATHEMATICAL DEPARTMENT.

Figures and lines, like words, are only instruments with which to convey ideas, or perform operations that cannot be easily done without them. The arithmetical principles used in business are few and simple; but accuracy and rapidity in computation are only gained by practice. College graduates often fail to retain clerkships, not because they do not know *why* given operations are performed, but because they can neither add, multiply or divide with that habitual correctness which renders their work reliable.

DRILL IN ARITHMETIC.

The chief design of this study is to make the student expert in the use of numbers, as employed by the industrialist for profit. The occupation of a successful farmer demands the application of every principle of practical arithmetic, and is taken as a starting point, rather than that of an abstract system. Beginning with a simple cash account, book-keeping is gradually developed to the full extent of its real utility. The areas of fields, expense of crops, construction of houses, sales of produce, and investment of capital, involve all the fundamental operations, and those of profit and loss, commission, taxes, insurance, exchange and stocks. Following this line, the student, so far from hammering away at "pure" science draws from the mathematical store-house what he needs, and sees why he needs it. Accuracy of calculation and posting, rather than a *mere* comprehension of the principles, is aimed at. Besides the recitation-room drill in business forms, practice in the field is also given. Estimating the number of cords in a pile of wood said to be 100x4x4 feet is one thing; measuring a pile of wood through which any number of cats may be harmlessly thrown, and in which four-feet sticks are the exception, is quite another and more difficult thing.

ARITHMETIC AND BOOK-KEEPING

Is a continuation of the above, having the same purpose and adopting such methods as the necessities of the class indicate. Thorough instruction in the principles and forms of business law is given. It will be seen that this method of teaching book-keeping, besides ensuring arithmetical practice, develops practical skill in that important art.

ALGEBRA.

Algebra is included in the course as a preparation for the study of Surveying.

DRAWING.

The practical value of Industrial Drawing can hardly be overestimated, first, because its study is the best drill for the development of the perceptive faculties, which are the ones most employed in daily life; and, second, because the working classes make a far greater use of lines than they do of figures. A farmer follows a line when laying a straight furrow; the carpenter uses the square and rule twenty times as often as he does figures; and a woman in cutting a pattern, or deciding that one bonnet is prettier than another, does so by the line or "form." So that either in its direct application, or in the exercise of that taste which comes from skill in using lines, this branch of mathematics is quite as important as a means of "mental discipline" as is the branch of computation, and is of far greater daily use. The admiral system of Prof. Walter Smith, Art Director of Massachusetts, is thoroughly followed through the grades of Free-hand, Geometrical, Object, Model, Perspective, Mechanical and Topographical Drawing, during the terms indicated by the Course of Study. In addition, constant practice in the application of lines to metal and wood is furnished in the Blacksmith, Carpenter, Turning, Scroll-sawing, Carving, Engraving and Printing shops, and to fabrics in the Sewing Department.

PRACTICAL GEOMETRY.

Not one farmer in a thousand ever uses the transit in surveying his land, the testimony of the county surveyor being decisive in court; but every farmer makes countless applications of lines and angles in laying off fields, roads, gardens, planning houses, determining levels, etc. The object of Practical Geometry is to teach the properties and uses of angles, and to make the student skillful in the application of lines to the field by the use of such simple instruments as are always within reach, or within his ability to construct; and accurate in the transferring of plans to the grounds, board or block.

PRACTICAL SURVEYING.

The drill in the use of figures and lines given by the mathematical course as above indicated, renders the mastery of surveying an easy task. There is no calculation made or formula used by the working engineer which cannot be readily understood and performed by a skillful arithmetician after proper instruction. The hand-book of the engineer is accordingly supplemented with such special guidance as is found necessary for a full comprehension of the mathematical principles and their applications; and extended field practice is required in the use of the compass, level, transit and theodlite.

STUDIES SPECIAL TO WOMAN.

Besides the studies already indicated, attention is called to the following:

SPECIAL HYGIENE.

As shown in the course, one term is devoted to the study of Physiology, from the text-book of Dr. J. C. Dalton. This is followed in the fourth year by a course of lectures to young ladies by Mrs. Cripps on the subject of Hygiene, embracing such instruction in hygienic matters as are valuable to woman.

FARM ECONOMY considers those affairs of the farm which usually come under the supervision of the farmer's wife or daughter, and which are not included in "gardening" or "household economy;" such as butter and cheese-making, dairy management, etc. A course of lectures is delivered by the Professor of Practical Agriculture. See heading, "Farm Economy."

GARDENING is included in Practical Horticulture. See heading, "Landscape Gardening."

HOUSEHOLD CHEMISTRY. See heading, "Household Chemistry."

HOUSEHOLD ECONOMY

Follows Household Chemistry and consists of lectures by Mrs. Cripps in the art of house-keeping, embracing cookery, domestic management, and kindred topics. Many elderly gentlemen sufficiently know, and more young gentlemen will duly discover, that systematic knowledge of how cooking ought to be done is luminously different from the ability to do it. Instruction without practice can effect but little. Accordingly a kitchen laboratory has been completely furnished, and affords every facility for drill in the art of cooking. This drill chiefly differs from that of a kitchen in the respect that after a girl has learned to wash dishes or pare pototoes she is not kept everlastingly at either. After full trial we have found it just as feasible to give this practice, with profit and pleasure to the pupil, as it is to give laboratory practice in chemistry—and no more expensive.

THE INDUSTRIALIST

VOL. IV. MANHATTAN, KANSAS, SATURDAY, NOVEMBER 23, 1878. No. 32.

THE INDUSTRIALIST.

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Address A. A. STEWART, Manhattan, Kas.

INDUSTRIAL EDUCATION.

Not the least of the things of which Kansas has a right to be proud is its magnificent educational system. At the start a wise and vigorous policy was adopted for the education of its youth; and ever since, whether in war or peace, poverty or plenty, the State has steadily developed and carefully fostered its various educational agencies. In addition to its munificent endowment of the public schools, it has provided higher institutions for three distinct kinds of instruction, namely, normal schools for the special training of public school teachers; a university for the education of those proposing to enter the professions of law, medicine or theology; and an agricultural college for the practical education of those who will engage in any of the "industrial professions or pursuits," as distinguished from the "learned professions." The relative demand for the three forms of education is indicated by the proportion in which the citizens of Kansas follow these vocations, as shown by the last United States census. Of every one hundred persons engaged in a vocation by which money is gained, the ratios were as follows:

Normal education:		
Teachers	1.13	= 1.13
Professional education:		
Ministers	0.43	
Lawyers	0.55	
Doctors	0.73	= 1.71
Industrial education:		
In agriculture	59.13	
In manufacturing and mechanical	14.63	
In personal service	13.89	
In trade and transportation	9.51	= 97.16
		100.00

AGRICULTURAL COLLEGE.

Recognizing the need for an education which should especially prepare the rising generations for an intelligent and successful practice of those vocations which are followed by ninety-seven out of each hundred of its citizens, the first institution endowed and put in operation by the State was its Agricultural College, so named because of the fact that agriculture is, both numerically and actually, the chief of these vocations. The title, "Agricultural" College, is apt to mislead those who are not familiar with the above fact, and also with the further fact that the acts of both Congress and of Kansas provide for an "industrial," as distinguished from a "professional" education.

ENDOWMENT.

The endowment received from the United States Government consisted of 81,601 acres of choice land, all of which had been sold at date of last report, except 31,461 acres now on the market. The proceeds from the sale of lands are invested in school bonds, and the securities in hand amounted to $238,101.28 by last report. The annual income from this endowment is about $20,000, out of which all expenses of instruction are paid. The only aid received from the State is for the erection of buildings, in accordance with the conditions of the congressional grant. This is the only one of the State's institutions which is not dependent upon the tax-payer for its maintenance.

LOCATION.

It is situated one mile from Manhattan, Riley county, one hundred and twenty miles west of the Missouri River, in the heart of the finest agricultural State in America. The Kansas Pacific Railway, with its connecting lines, gives speedy communication with every quarter.

COURSE OF STUDY.

The course of study is shaped with direct reference to giving an industrial as distinct from a professional education. It makes the pupil intelligent and expert in the use of the English language; in the use of numbers as employed by the farmer, book-keeper and engineer; and in the use of lines as employed by the carpenter, painter and architect. Words, figures and lines are tools which all men use. It then gives thorough instruction and laboratorial or field drill in the following sciences as essentially useful to an intelligent and successful farmer: Physiology, Practical Agriculture, Natural Philosophy, Botany, Entomology, Practical Horticulture, Landscape Gardening, Inorganic Chemistry, Organic and Analytical Chemistry, Surveying, Geology, Mineralogy, Zoology, Meteorology, Agricultural Chemistry, Political Economy, Practical Law and Logic. It has an equally practical and effective course for the education of woman as a woman, instead of as a man, and as a worker instead of as a butterfly. Then, it has a well-stocked farm and nursery, and well-equipped shops, for giving boys practice in farm and nursery work, and in wood and iron work, and for giving girls drill in dress-making, printing, telegraphy, carving, engraving and music.

Farm Scholars.

There is a growing need for the better education of the boys in the line of farming. As the Master of the California State Grange said, in a recent address:

"The rudiments of the natural sciences must be taught in our public schools in the rural districts, and our University of California furnish us professors of agriculture. We must know what has to be learned as a basis for further acquisition."

In order to make manual labor interesting, thought should accompany it. The farm should be to the boy, at least to some extent, an experiment station. His first impulse will be to inquire why it is necessary to perform a certain kind of work in the manner directed.

If we put manual labor first, without instruction in the science of farming, it would be a very unspirited boy who would not weary in performing his task. With the proper instruction in the principles of farming, there is but little doubt that most boys would take such an interest in the business as would lead to a well-settled desire to learn still more in regard to it, and make it their future calling.

We incline to the opinion that the "boys" on the farm would not be in such haste to abandon farming for other occupations, if an effort were made on the part of the parents to make home and farm life more attractive, instead of complaining constantly, as too many parents do, of the hardships, real and imaginary, of farm life. Such complaints make every member of the household discontented, whereupon they seek relief by engaging in mechanical, or mercantile, or professional pursuits. If unsuccessful in these, life becomes a failure. Farming need not be a life of thoughtless drudgery. We deter many an ambitious boy from studying agriculture because we ourselves see no benefit in it. Prof. Brewer, in his valuable address before the National Agricultural Congress, states the plain truth when he says: "It is not to learn to plow, hoe and reap, but how to do it, and when and why, that a young man should go to college. The acts themselves can be learned without ever leaving the farm. Teachers of agriculture should have practice in running a farm for money, on business principles, before attempting to teach at all. Primary instruction in Europe and America is equally faulty. The want of proper teachers is felt. Invest the country in a measure with some of the attractions with which it is viewed by one scientiefially educated, and the rush of the young men to the cities will cease and the agricultural colleges begin to fill up. The primary school of to-day fails to lead the farmer's boy to any higher appreciation of his father's pursuit."—*Cincinnati Grange Bulletin.*

A QUANTITY of insect poison, called by the manufacturers "London purple," designed for destroying potato beetles, and experimented with by the Iowa Agricultural College, has been proved on trial to be valuable for this purpose. The Professor of Horticulture, reporting upon it, says that the virtue of "London purple," as in the case of Paris green, lies in the arsenic it contains. Its advantages over Paris green, as stated by the Professor, are its extreme fineness, permitting it to be mixed with water, its adhesiveness, its purple color, which enables one always to detect its presence on leaves, even when it exists in but infinitesimal quantities, and its cheapness. Should further experience and a more extended use of "London purple" confirm these first reports in its favor, this material will doubtless soon appear in considerable quantities in our markets, where as yet it is almost unknown.—*New York World.*

THE following paragraph is taken from a long article in the Leavenworth *Appeal*, and is a description of Ellsworth and the surrounding country. We print it because it is a beautiful pen picture of the loveliest country God ever made:

If you take the trouble to climb that young mountain, as I did, you will see farm-houses dotting the landscape. Here and there you will hear the far-off tinkle of bells, as the droves of cattle and sheep are driven home and corraled for the night,—for this is a land of flocks and herds. You can trace the "swift, winding" Smoky, as it winds in and out, from side to side, of the broad, beautiful valley, and miles away is lost in the distance. You look down upon a lovely little city which has fine stone and brick blocks. You see stretching its length away eastward and westward, a black streak that glitters as the sun's rays fall upon it: it is that great pioneer of civilization, the Kansas Pacific Railway, which has drawn after it thousands of those sons of agriculture who make a nation's wealth — the farmers, and which has developed a new nation. The eye roves uninterruptedly over a great valley, and far beyond over the billowy uplands whose gentle undulations seem like great ocean waves, constantly chasing each other in shore until they break upon the rocks of infinity. You turn round and round; you drink in the scene, in huge draughts, until at last you comprehend it all. You are in the pulpit of nature's amphitheatre; on every side stretches the grandest country the sun ever shone upon. You seem to hear the hum of the industry yet to come; you turn, and lo! it is the rumble of a white-winged messenger whose outlines you can dimly trace against the eastern sky: 'tis the emigrant; you turn and murmur they are coming. The prophets of the air take up the faint echo until is it echoed and re-echoed in tones of thunder. Yes, they are coming like the hosts of Israel; they are coming in one vast tidal wave, that will in two years dot the prairie with white cottages and make an empire of freemen.

Ambition in Farming.

If there is any one thing more than another lacking in the mind of the average farmer, it is ambition. Ambition to excel as a tiller of the soil, a grower of the finest crops; ambition to breed the finest animals of the best breeds; ambition to have model buildings, fences, hedges, lawns, trees, shrubs and flowers.

When a young lawyer takes his position at the bar, he takes it with the firm determination to eventually become the peer of any man in the profession. Blessed with fair ability, unless through discouragements and delays he weakens and falls, he pushes on for years, and step by step he wins position, honor and fortune.

So with men in other professions. An honorable ambition spurs them on, obstacles are overcome, and at the end they can look down from the height they have reached, and with pride and satisfaction view the work of a well-spent life that has been a continued series of hard-won victories, every one of which has brought its own reward in a higher manhood and in the noble example it has set for others.

The merchant, the banker, the engineer, the inventor, the business man of all classes has before him an ideal which he strives to reach with every energy of mind and body. But is this so with young men born on the farm and who intend to spend their lives there? Do they start out in life for themselves with the firm resolve to be the best farmers in the neighborhood, the township, the county, the State? Inspired with this laudable ambition, do they labor persistently with brain and muscle to this end? Do they read, calculate, observe, question, study, with this single purpose always before them?

The farmer who is enthusiastic in his vocation imparts his enthusiasm to everything around him. His wife does not lead the life of a drudge, a slave, but she walks side by side with him, her heart full of hope, her active mind suggesting and planning for others to perform. The children are inspired by the example everywhere before them. They take delight in their active out-door life, and a deep interest in the success of everything going on around them. They are born farmers, and nothing can allure them from farm life. The very domestic animals have an air of enterprise and thrift, and every acre of the farm seems ambitious to respond to the efforts and hopes of the owner.

The ambitious farmer, if persistent, is always successful. And successful as a farmer he may be successful as a man. He has the confidence of the community in which he lives. He is called upon to fill the small but important neighborhood offices. He is commissioner of highways, school director, justice of the peace. He fills these offices well. His ability is strengthened. He is sent to legislate for the State. He knows the wants of the people and he works for them. A seat in Congress is within his reach. In fact, there need be no office within the gift of the people to which he may not aspire. But such a man will never forget that he is a farmer. Being a true man he thus ennobles his profession. He has no cause to be ashamed of it. To him there is no higher calling. And such men will convince, are convincing, the world that there is no vocation higher or more honorable.

For the good of the country, as well as for his individual good, it is the duty of the farmer to be ambitious, to get out of the ruts, and assume all the rights and responsibilities of his position.—*Farmer's Review.*

Too much money is invested in land and too little employed in its cultivation.

JOSEPH HARRIS, of the Moreton Farm, Rochester, New York, reports the best crop of winter wheat he has ever raised. He planted the Clawson variety.

IT matters not whether your son makes use of his trade or not, let him learn one, and he then possesses a fortress into which he can creep when the "slings and arrows of outrageous fortune assail him." His knowledge how to set type will not prevent him selling calico if he prefer it. We have known men who were glad to fall back upon this knowledge when other things failed them, and they won at the case that which they could not win behind the counter.

THE *Scientific Farmer*, in an article on Agricultural Education, says: "When men trained to think, and whose thought is trained to take expression in action, enter upon the arena of farming life, the possibilities of our soil and location are to become developed to an extent little realized. A class of educated farmers means greater opportunities for the common farmers whose education has been derived from toilsome experience and the conflict of trials. It means better and more practical lectures, a higher-toned agricultural press, the exclusion of dead beats from agricultural influence, and a healthier tone in agriculture generally. Education brings self-respect, and self-respect draws to itself the respect of others. This is our agricultural politics in a nutshell."

THE INDUSTRIALIST.

SATURDAY, NOVEMBER 23, 1878.

JNO. A. ANDERSON, Managing Editor.

ASSOCIATE EDITORS, MEMBERS OF THE FACULTY.

Arsenical Papers.

So many articles upon the dangers from the use of arsenical wall-papers have appeared in the press, that it may seem needless to again call attention to the subject. But if any apology is required for so doing, let it be found in the prevalence of the condemned papers. So long as manufacturers persist in using arsenical colors and consumers unconsciously use the articles thus colored, there is need for every means that will cause our people to realize the dangers to which they expose themselves. If the demand for these papers ceases, their manufacture will also cease. The venders are generally innocent, for they are unaware of the nature of the colors; but manufacturers, knowing the dangerous character of the substances used, show a reckless disregard for the welfare of their fellows.

The green pigments containing arsenic, generally employed, are the arsenite of copper, known as "Scheele's Green," and aceto-arsenite of copper, known as "Schweinfurt's Green," "Emerald Green," and various other innocent aliases. The brilliant green which they afford has met with universal favor; and, being permanent, these arsenical colors are almost universally employed where these qualities are desired. Six samples of wall-paper containing green vines, leaves and other figures, were recently examined. Five gave unmistakable evidences of arsenic. In some cases, the arsenic was present in great abundance. These pigments are insoluble in water, and are applied to the surface of the articles to be colored by means of a size. The alternations of heat and cold, of dryness and moisture, destroy the adhesiveness of the size; and, ultimately, the arsenic, freed from the walls, floats in the air of the room. It has often been detected in the dust collected in rooms hung with arsenical paper.

But this use of arsenic is not confined to wall-paper. It occurs in an almost infinite variety of articles. Ornamental boxes and cards owe their splendid green to this deadly substance. The same is generally true of green gloves, green tarlatan and artificial wreaths. Children are given toys and bonbons colored with arsenic compounds. In tinted letter-paper, the Schweinfurt's green is incorporated with the pulp during the manufacture. Lamp-shades are often colored with arsenic, in which case the heat of the lamp may volatilize the arsenic and send it on its mission of death.

The danger does not, as some feign to believe, exist in the imagination of a few fanatics. It is real. Many cases of poisoning from these sources are on record. A few cases have been fatal; but more frequently the effects are constitutional. The symptoms are the same as those of some common diseases; and often the patient is treated for such disease without the least suspicion of the real cause. Dr. Taylor, in his "Treatise on Poisons," says:

"The symptoms produced by arsenicated wall-paper are of a uniform character, showing their origin from a common cause. They are as follows: dryness and irritation of the throat, with cough, irritation of the mucus membrane of the eyes and nostrils, dry cough, shortness of breathing, languor, headache, loss of appetite, nausea, colicky pains, numbness, great prostration of the strength, sleeplessness, a feverish condition and wasting of the body. These symptoms may not all present themselves in any one case; they are derived from the examination of numerous cases which have been referred to me. They resemble those of a severe cold."

We have but a very slight conception of the number of persons who go into a decline, as we are told, and finally die of consumption, when the true cause is this slow poison. These persons remain in close rooms, lest the fresh air give them additional "colds." Every breath of air they breathe is freighted with disease and death, instead of with joyous life and vitality.

It is encouraging, however, to note that in the matter of wall-paper the taste of our people does not favor the green colors as formerly, and our dealers have a large proportion of other shades. But, nevertheless, immense quantities of these poisonous colors are yet taken into our houses in wall-paper and other articles. The rejection of papers with conspicuous green bands and vines does not insure perfect immunity from the evil. The best grades of paper often have the green added to somber colors, giving a fine and delicate tint that is very agreeable. And since the poison is over the whole surface of the paper, it may contain large quantities and be difficult of detection.

It becomes a question of practical importance how arsenical colors may be detected. A very simple method is, to place a few drops of aqua ammonia, or hartshorn, upon the suspected papers. If, after a few minutes, the green color is discharged or so changed as to indicate that the ammonia is dissolving the coloring matter, pour the liquid upon a clean piece of glass and drop in it a small crystal of silver nitrate or lunar caustic; a light yellow or yellowish green precipitate will form about the crystal, if arsenic is present. These articles may be obtained at any drug store, and will serve as a test for common use. Those who wish a more delicate and more satisfactory test may place strips of the colored paper in a porcelain capsule, covering it with a hot saturated solution of potassium chlorate. This is to be evaporated to dryness in a water-bath. The paper is then burned, covering it with a bell-glass that no arsenic be lost. The ash is then pulverized and treated with the water with which the glass and plate have been rinsed. Thus the arsenic, freed from copper, etc., in combination with potassium, is dissolved. It may be neutralized with sulphuric acid and introduced into a Marsh's apparatus.—*G. H. Failyer.*

Bulbs.

There are few flowers that give more satisfaction than these. There may be a difference of opinion as to what are true bulbs. According to botany and the facts, a bulb is a collection of the butt ends of leaves or undeveloped scaly leaves, stored with nourishment for future use. Nearly all plants consist of three parts,—roots, stems and leaves. The roots of a bulb are those threadlike roots at the bottom of an onion or lily. The stem is very short and is that little hard core or knot that remains hard when an onion is boiled. To it are attached all the roots and the leaves and scales of the bulb. Inside the thick, scaly folds, so bountifully stored with rich food for the next year's growth, is one or, rarely, two or three buds. The plant has been a whole year, or may be two or three years, growing, and every year enlarging and renewing itself until it has produced a strong flower-bud. The whole of this rich food is then made use of in the growth of the flower-stalk, and another bulb is formed by the side of the old exhausted and decayed one.

But there are some things called bulbs that are not bulbs. Such are the short, hard, fleshy underground stems of the gladiolus, the crocus and the Indian turnip. These are properly called corms. Also, the tuber of the common potato, which is an enlarged, fleshy, underground stem. It has buds or "eyes," and so has the corm. But it matters less what we call these things than whether we plant them or not. Nature has suited them for making rapid growth in a dry climate.

In Kansas there are more bulbs than we may think. The common sheep-sorrel of the West grows from bulbs. So does the bright anemone with its many varieties, and the nodding erythronium. These are two of the earliest flowers we see in spring. But if we want early flowers about our doors, we must plant the crocus and hyacinth. The snow has scarcely gone when the crocus smiles in our faces. The hyacinth is more showy, and its fragrance is delicious. The lily is perhaps the finest of all bulbous flowers. We have the tall tiger or leopard lily, which continues to bloom for more than a month in midsummer. The white lily is also tall, and its whiteness is the emblem of the purest purity. There are many varieties of the Japan lily which surpass even these in variety and brilliancy of color, although they are not so tall and strong, or so free to bloom. The tulip is not less varied and gorgeous in its flowers. These are all hardy, and should be planted in the fall to secure good blooming the next year.

Now is the time to make beds and plant these bulbs. A few cents or dollars exchanged for these will not only give pleasure the next year, but, as they multiply without attention, you will have the worth of your money and about one hundred per cent interest after the flowering season is over. You can then replant or let them remain in the ground, and have some to give to your neighbors. If planted almost anywhere in rich soil, about four inches deep, before the ground is frozen too hard to work, they will grow finely. A light covering of coarse litter is the best protection; corn stalks are good, as they do not smother the plants.

You can procure all kinds of bulbs of James Vick, Rochester, N. Y.; or if you want to patronize a good, honest, Kansas man, send to J. W. Latimer, of Pleasanton, Linn county. I have known and dealt with him for years, and he will do just what he promises. About spring bulbs I may tell you by the time you are thinking of that season's work.—*H. E. VanDeman.*

The Use of Science to the Farmers.

Many farmers who have not had the opportunity of studying the sciences often inquire: Of what use is science to the farm? They will cite farmers who had the advantages of a scientific course, and remark that the experiments performed, or scienitfic investigations of any kind made by them, are of the least and oftener of no value whatever to the farmers as a class. But we are compelled to make allowance for talk of this sort, as it requires some thought and study to penetrate this question and obtain satisfactory results.

Every reformation or improvement has encountered greater or less opposition before it has been generally recognized by mankind; and science with respect to the farm is not an exception to this rule. But agriculture itself must be progressive before science can do anything for it, and each advancing step that it takes brings it so much nearer to the point at which science can join hands with the art; and by the union of these forces a higher and more rapid development of agriculture may be obtained.

The farmer who observes a phenomenon naturally asks the cause. To answer this requires a knowledge of science. He knows from past observation and experience why he applies fertilizers to the soil; but how they give to the soil those properties necessary to fertility is a problem which can only be solved by science itself. To be able to apply fertilizers in one place where they will be of double the value that they would be in another, is certainly worth the time and consideration of every farmer. Science thus far has done comparatively little for the farm. We can see it in the performance of its greater functions; but in its more minute workings we cannot trace it.

By understanding the physiology of animals and vegetables, we are better enabled to breed stock and grow crops than without this understanding. Having a knowledge of any process, we can perform it to a greater advantage than we could without such knowledge. What lies at the foundation of a knowledge of agriculture and the manner of practicing the art? We reply, systematic knowledge—science.—*Wm. K. Eckman, of class in Practical Agriculture.*

Rev. R. Cordley, of Emporia, preached a sermon on "The Normal School" a few Sabbath evenings since. Referring to the functions of the three State institutions, he spoke as follows about the Agricultural College:

The Agricultural College should be broader than its name implies, and should teach not only the principles and practice of agriculture, but the principles that underlie all the industrial arts—the principles that underlie architecture and building, mining and the working of metals, the manufacture and coloring of fabrics, and other branches of industry.

THE INDUSTRIALIST.

SATURDAY, NOVEMBER 23, 1878.

Average temperature for the week, 42°.82; range of temperature, 39°; no rainfall.

The College has some very nice Berkshire pigs for sale. Send orders to E. M. Shelton, Manhattan, Kansas.

The present term will close Friday, December 20th; and the next term will begin Friday, January 3d, 1879.

Every one speaks about the delightful weather we are now enjoying. It amazes even the "oldest inhabitant."

George Platt will start for Oberlin the first of next week. He intends stopping with Prof. Kedzie until he gets fully settled.

The third monthly examinations will be held next Friday. We expect more favorable reports than ever from the various classes.

The ladies of the Presbyterian Church have engaged President Anderson to deliver his Kansas lecture in Manhattan in a few weeks.

Mr. Walters keeps at work on his new house. The masons are through with the building, and the carpenters are putting on the roof.

Next Thursday being Thanksgiving, a national holiday, it will be observed by the College in the usual manner. No recitations will be held.

Prof. VanDeman has had a number of students at work for some days, taking up pear trees. Several hundred of these trees have lately been sold, and the Professor is preparing to deliver them.

A number of the Sons of Temperance representatives visited the College on Thursday. They spent several hours strolling through the buildings and over the grounds, and expressed themselves as favorably impressed with the Institution.

Mrs. Anderson went to St. Louis the first of this week, in company with some friends from the South who have been visiting here and at Junction City for several months. She returned last evening, and reports having had a very pleasant time.

More building and improving is going on in Manhattan this fall than at any time in the past five years. There is great demand for dwellings, and it is strange that some capitalist does not erect a dozen small houses. They could be filled at once.

We neglected to give the proper credit to an article which appeared last week. It was entitled, "How to Select a Farm," and was written by W. H. Sikes, a member of the class in Practical Agriculture. The omission was unintentional, and we gladly make the correction.

The Ladies' Association of the Congregational Church, Leavenworth, has arranged for a course of lectures, to be delivered in that city during the winter for the benefit of said Association. President Anderson delivered his address on "Kansas," the first lecture in this course, last Thursday evening.

The Alpha Beta Society held a moot-court yesterday afternoon, instead of their regular session. The room overflowed with students and strangers, and the exercises were very interesting. The room looked for all the world like a court-room; and the "sober" judge and "shrewd" lawyers, with great piles of worthless books, spread themselves around as promiscuously as possible.

The Webster Society, on account of the inclement weather, did not meet Saturday evening, Nov. 9th. Convened as usual last week, with a goodly number of "goodly-looking" young men present. The officers elected were duly inaugurated, and entered upon their respective duties. A spirited debate ensued. The victors, Messrs. Rushmore and Morrow, convinced the judges that compulsory education would not be a benefit to the United States.

The order of extemporaneous speaking was participated in by nearly all present. The *Reporter* was presented by Mr. W. S. Elliot. It is needless for me to say that he made an able effort. Under new business, a committee was appointed to consult with Noble L. Prentis, with a view of securing him to deliver a lecture in Manhattan under the auspices of this Society.

Our programme for next meeting is as follows: Question for debate, "*Resolved*, That the right of suffrage should be limited to those who can read and write." The disputants are: Affirmative, Records and Eckman; negative, Morgan and Todd. For declamation, C. H. Messenger; select reading, Elisha Burr. Special invitation is extended to the students of the College, with the promise that we will endeavor to make the exercises agreeable.

MERCURIUS.

SOURCE OF WEALTH.

"The original source of wealth is the bounty of God in nature." Man is unable to create matter, or in any way destroy it. He may change its form, and modify it so as to produce something which will gratify his desires and for which he can get something in exchange. Nature places her resources before man, for him to use and control. And as he through labor uses and controls the resources of nature, so will he in the same ratio produce wealth. The natural resources of our own country are greater than those of any other. Hence, we see one of the reasons whereby we at the present day, and in the comparatively short period of our existence, are among the wealthiest and most prosperous of all nations now in existence.

Our natural resources are our only resources. These are the physical and mental powers of our people,—the rich mines, the productive lands, and all the physical objects which existed here before the white man came. To make use of the resources of nature, the mental powers must investigate and discover, so as to find out the laws and properties of nature; and in what other nation is this power of investigation and discovery carried further than in the United States. After discovery comes invention, by which means are produced whereby man is enabled to take advantage of the laws and properties of nature to produce from the source of all wealth something which he desires, and which he can exchange for something else which he desires; and no one will dispute the Yankee's right of supremacy in this power of invention. Other nations have been running along in the same old rut for centuries. But when a foreigner comes to the United States he is soon inspired with the energy of the nation in general, and goes right along bringing forth wealth in its secondary form; that is, the production of wealth by the application of human labor to the resources of nature, changing and modifying matter so as to produce any thing which is desirable and exchangeable.

L.

The following are some of the "College Items" furnished the *Nationalist* by its special correspondent:

Alpha Beta Society intend having a moot-court instead of their regular session this week. Able lawyers and a profound judge have been secured for the occasion.

Already we hear talk of a social at the close of the term, and it is rumored that the Faculty would like to have literary exercises combined with the social, which idea we like very much.

Monday morning rhetorical exercises in chapel commenced again, beginning with the junior class. Two will declaim each morning, and after they are exhausted, we shall hear from the senior class. This entertainment is free to all that wish to come.

The senior class has just finished mineralogy under Prof. Failyer, and now take up geology for the remainder of the term. They have also nearly finished Wayland's political economy, under Prof. Ward, and will take up parliamentary law.

NATIONALIST ITEMS.

John Griffing is teaching school with good success at Deep Creek.

Miss Kate Hoyt has obtained a fine situation in a milliner shop at Lawrence. She was an Agricultural College student.

Everybody is burning coal, and great quantities of different kinds are being shipped here. The real Pennsylvania anthracite coal is shipped to individuals.

Next Thursday will be Thanksgiving day. How many people will on that day be the happier for what you have done, and from grateful hearts ask God to bless you?

A Riley County Sabbath School Convention will be held at the Knapp school-house, on the Wild Cat, commencing Saturday, December 14th, at two o'clock P. M., and continuing over the Sabbath.

The complaint in regard to the scarcity of dwelling houses grows louder and more frequent. If a large number of houses are not erected at once, rents will rise from twenty-five to fifty per cent within the next six months.

Not over half the land in this township is under cultivation. This should not be. Every acre that can be should be broken. The business men should help the farmers to improve their places, and thus increase business and taxable property.

At a meeting held last Saturday night in Green & Hessin's office, Geo. S. Green, Orville Huntress and Jacob Winne were appointed a committee to consider the various plans for erecting a public hall, with instructions to report at an adjourned meeting to be held at the same place, Saturday, November 23d, at 7:30 P. M., sharp.

The Presbyterian oyster supper was a success. Peak's Hall being occupied, there was no more suitable place than the old meat market. (We don't need a new hall, oh, no!) The ladies improvised a very commodious kitchen of the back room, while in the front tables were arranged with a seating capacity of about fifty persons, which was filled and re-filled—we couldn't begin to say how often—and the receipts showed the neat little sum of $72.13 after all expenses were paid, which was, no doubt, very gratifying to the ladies, as well as the fact that the supper gave such general satisfaction.

DIRECTIONS TO APPLICANTS.

TERMS OF ADMISSION.

Candidates for admission must be fourteen years of age, and pass a satisfactory examination in reading; arithmetic, through decimal fractions; and English grammar, to syntax. Classes are started at the beginning of each year in Drill in Arithmetic and Drill in English; and the pupil must have the knowledge above indicated, else he will be unable to retain position if admitted.

Pupils will be received at any time during the year, if able to pass an additional examination upon the subjects studied by the classes which they expect to enter. But they will find it greatly to their advantage to be present at the opening of each term, or as soon thereafter as posssble.

GRADES.

Both the Literary and Industrial recitations are graded daily upon a scale of 100; and an examination of all classes is made at the close of each month. A student not attaining an average grade of sixty is promptly dropped to a lower class, or excluded from the Institution until able to do so. The work of grading is strict and uniform in all the departments, and this process is rigorously used for sifting out incompetent and indolent pupils; thus more than accomplishing all that is designed to be effected by a "high standard of admission." Hence, the student's continuance in the College wholly depends upon his own action.

The course is based upon the determination to make the labor required in the preparation of one industrial and three literary recitations as much as the average student can perfectly perform, in ten hours a day. We design to give the pupil the worth of the time expended at College; and, in order thereto, he must do a full day's work with brain or hand. Only those students who can maintain a standing of ninety in each study will be allowed to take more than the prescribed number of recitations; and no one will be permitted to have less than one industrial and three literary recitations.

RELIGIOUS.

Unless otherwise directed by parents, students are required to attend chapel at 8:30 A. M. on academic days, and divine service once every Sabbath.

EXPENSES.

There are no charges whatever for enrollment, attendance or instruction in the regular courses; nor are there any "contingent fees" for the repair of buildings, for the use of books or apparatus, for diplomas, or the kindred privileges usually grouped under the term "contingent." Male students are furnished instruction, the use of apparatus, instruments or tools, in both the literary and industrial classes marked out for them, without any charge. And the same is true of female students in the regular classes provided for them. Printing and Telegraphy are industrials primarily provided for the education of female students, and male students taking either of these are charged $1 per month for use of instruments.

Instrumental music is a fine art or "accomplishment," rather than a mechanical art. We do not place it among our "industrials" in the same sense, or for the same purpose, that we do those provided for teaching the trades. Accordingly, a fee of $12 per term, or seventy-five cents per week is required from female students for tuition and the use of pianos or organs.

The only charge made for material in either the literary or industrial departments is for the chemicals used by students in laboratory practice, which are furnished at wholesale prices, and amount to but a small sum.

Furnishing an absolutely free education is as much as can be reasonably asked; and the Institution neither boards, clothes, nor supplies the student with text-books. Boarding can be obtained in private families at from $2.75 to $4 per week. Washing costs from seventy-five cents to one dollar per dozen. Text-books, which can be procured in Manhattan, cost from $2 to $5 per term.

No student need expend over $5 per week; and many of our best pupils are living at $1.25 per week. Students desiring to "board themselves" can do so at from $1 to $2 per week. In a club of four young men, renting a house, the average cost to each for the term was $1.11 per week.

LABOR.

Manual labor by the students may be for either of two purposes: First, to acquire skill in a given art; second, to earn money. In the first case, the labor is educational; in the second, it should be paid for by the party benefited.

Educational Labor.—Manual labor in the recitations of the Industrial Departments, like mental labor in those of the Literary Departments, is purely educational and will not be remunerated. While the interest of the student will be held paramount in the direction of this labor, the practice necessary to dexterity will be required.

Remunerated Labor.—When the Institution needs labor on the Farm or elsewhere which is not educational, but simply for its own profit, and which a student is able and willing to perform, it becomes an employer instead of a teacher, and he an employe instead of a scholar. It pays for work, he works for pay. The relation between them is commercial, not educational; and both parties must act upon business principles. Hence, the College furnishes only such employment as its own interests require, and will pay according to the value of the service rendered at from seven to ten cents an hour.

AMOUNT EARNED.

It is impossible to predict how much a given person can earn, since that depends upon what he can do and what work there is to be done. Hence, it is wholly impossible for us to answer the question so often asked: "Do you think I can meet my expenses by work?" Some students make one-half their expenses, some the whole, and exceptional men have made more than expenses. As a rule, a faithful boy skilled in farm work can earn half his expenses on the Farm or in the Nursery. During the year he can ordinarily acquire sufficient skill in the wood or iron shops to enable him to make articles for sale. The whole question is one for his own consideration and decision. We can teach all who come, but cannot absolutely *promise* anything more. Hitherto we have refrained from holding out strong inducements respecting the amount of labor we might have to offer; but in view of the fact that during each of the last three years we have had more to do than the students could perform, we are inclined to give greater and positive encouragement on this point. Any boy who is in dead earnest, who is familiar with farm operations, and who can raise $50 to start with, should be able to carry himself through the four years' course. And certainly this places an education within the reach of every determined boy. As yet we are unable to offer similar advantages to girls, not requiring labor in the College departments which they can perform.

RULES.

1. Behave as a true man or woman should, at all times and in all places.

2. Attend to your own business promptly, thoroughly and courteously; and vigorously let alone that of other people.

3. Penalty: "Leave!"

PUBLICATIONS.

The "Hand-Book," published in 1874, containing a full discussion of the educational question and the aims of the Institution, will be forwarded to any one desiring it.

THE INDUSTRIALIST, a weekly journal edited by the Faculty and published by the Printing Department, contains original and seasonable articles on the Farm, Orchard, Trades, Sciences, and Education. Price, 75 cents a year. Address A. A. Stewart, Manhattan.

CALENDAR.

Fall Term 1878.—Begins Wednesday, September 4th, and closes Friday, December 20th.

TO NEW STUDENTS.

Bring the text-books you have been using. On arrival, first arrange for your boarding. A. A. Stewart, Sup't Printing Department, will furnish information, either by letter or on application, concerning boarding places or rooms for rent. Report to the President at 8:30 A. M., immediately after chapel, for enrollment.

For further information apply to Jno. A. Anderson, President, Manhattan, Kansas.

LITERARY SOCIETIES.

ALPHA BETA.—Chartered, December 26th, 1870. Meets in College building every Friday at 2 P. M. Ladies admitted. New students cordially invited to attend. C. J. REED, President.
MISS MARY CLARKE, Secretary.

WEBSTER.—Chartered, January, 1871. Meets in Telegraph Hall every Saturday evening. Visitors, especially students, always welcome.
C. M. HULETT, President.
H. C. RUSHMORE, Secretary.

RAILROAD TIME-TABLE.

KANSAS PACIFIC RAILWAY.

PASSENGER ARRIVES.

No. 2, going East	11:45 A. M.
No. 4, going East	3:47 A. M.
No. 1, going West	4:40 P. M.
No. 3, going West	4:35 A. M.
No. 9 (freight), going West	8:45 A. M.

Nos. 1 and 2 run daily; Nos. 3 and 9 run daily except Monday; No. 4 runs daily except Sunday. Passengers with tickets are carried on No. 9.

GEO. C. WILDER, Agent.

METEOROLOGICAL RECORD.

Condensed by Prof. Failyer from the observations taken at the State Agricultural College, for the week ending November 21st, 1878. Latitude, 39°12′; Longitude, 96°40′; Height, 1,200 feet.

DAY OF WEEK AND MONTH.		Temperature. Max.	Min.	Mean.	Bar. Mean Hight.	Inches of Rainfall.
Friday	15		35°	42°.25	28.64	
Saturday	16		37	43 .25	28.79	
Sunday	17		34	43 .50	28.90	
Monday	18		30	45 .25	28.73	
Tuesday	19		31	42 .50	28.79	
Wednesday	20		36	45 .50	28.55	
Thursday	21		28	37 .50	28.79	

Average temperature for the week, 42°.82.
Range of temperature for the week, 39°.

KANSAS STATE AGRICULTURAL COLLEGE.

FACULTY.

J. A. ANDERSON, *President, Prof. Political Economy.*
M. L. WARD, *Prof. Mathematics and English.*
G. H. FAILYER, *Prof. Chemistry and Physics.*
E. M. SHELTON, *Prof. Prac. Agricul., Sup't Farm.*
H. E. VAN DEMAN, *Prof. Botany and Horticulture.*
J. E. PLATT, *Prof. Elem'y English, Mathematics.*
JNO. D. WALTERS, *Teacher Industrial Drawing.*
HON. D. J. BREWER, *Lecturer on Practical Law.*
T. T. HAWKES, *Sup't Mechanical Department.*
A. A. STEWART, *Sup't Printing Department.*
W. C. STEWART, *Sup't Telegraph Department.*
MRS. M. E. CRIPPS, *Sup't Sewing Department.*
W. L. HOFER, *Teacher of Instrumental Music.*

INDUSTRIAL EDUCATION.

The real value of an education to the student depends upon two things: First, the practical worth of the knowledge taught; and, second, the degree in which he makes it his own. Hence, the ability of any institution to give a practical education depends upon the kind and aim of the knowledge it teaches, and upon the thoroughness of the instruction therein. The State Agricultural College was directly endowed by Congress, and is guided by the State, for the specific purpose of furnishing to the industrial classes of Kansas a "practical" education, that is, "one fit for use." As its name indicates, and as the statistics of the industries of the State require, its chief work must be that of giving a useful and usable education to those who will engage in farming; and, therefore, the Farmer's Course must, from the nature of the case, be its main one.

FARMER'S EDUCATION.

Words and figures are merely instruments with which to record ideas. They are not themselves ideas, nor should they be made the chief end of an education. As a wagon is necessary to haul grain, so are they a necessary part of an education; but as the wagon is not the grain, so they are not the knowledge which the farmer converts into money. Hence, the classics and higher mathematics are not taught. But it will be noticed in the following course that so soon as the pupil acquires working skill in the use of the English language as a tool, and of figures and lines as mathematical tools, those arts and sciences which present knowledge that has a cash value to the farmer are taught as rapidly as their importance and thorough acquisition will permit. Studies numbered (1) and (4) in the second, third and fourth years are the spine of the course, to which the others are as ribs and muscle.

FARMER'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Practical Agriculture (advanced.)	1. Practical Agriculture (advanced.)	1. Botany, Entomology.	1. Botany, Entomology.	1. Physiology.	1. Physiology.	1. Drill in English.	1. Drill in English.
2. Geology, Mineralogy.	2. Geology, Mineralogy.	2. Inorganic Chemistry.	2. Inorganic Chemistry.	2. Rhetoric.	2. Rhetoric.	2. Drill in Arithmetic.	2. Drill in Arithmetic.
3. Polit. Economy, Practical Law.	3. Polit. Economy, Practical Law.	3. Practical Geometry.	3. Practical Geometry.	3. Algebra.	3. Algebra.	3. Industrial Drawing.	3. Industrial Drawing.
4. Zoology.	4. Zoology.	4. Horticul., Landscape Gardening.	4. Horticul., Landscape Gardening.	4. Practical Agricul. (elementary).	4. Practical Agricul. (elementary).	4. English Structure.	4. English Structure.
5. Agricul. Chemistry, Meteorology.	5. Agricul. Chemistry, Meteorology.	5. Organic, Analytical Chemistry.	5. Organic, Analytical Chemistry.	5. Physics.	5. Physics.	5. Adv'd Arithmetic, Book-keeping.	5. Adv'd Arithmetic, Book-keeping.
6. Logic.	6. Logic.	6. Practical Surveying.	6. Practical Surveying.	6. Industrial Drawing.	6. Industrial Drawing.	6. U. S. History, Industrial Drawing.	6. U. S. History, Industrial Drawing.

WOMAN'S EDUCATION.

Nearly one-half of our students are females, and the Woman's Course is prepared expressly for their liberal and practical education. We have no doubt whatever that practical men and women, who understand what it means and what it seeks to do, will fully endorse it.

WOMAN'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Farm Economy, Special Hygiene.	1. Farm Economy, Special Hygiene.	1. Botany, Entomology.	1. Botany, Entomology.	1. Physiology.	1. Physiology.	1. Drill in English.	1. Drill in English.
2. Geology, Mineralogy.	2. Geology, Mineralogy.	2. Inorganic Chemistry.	2. Inorganic Chemistry.	2. Rhetoric.	2. Rhetoric.	2. Drill in Arithmetic.	2. Drill in Arithmetic.
3. Polit'l Economy, Practical Law.	3. Polit'l Economy, Practical Law.	3. Industrial Drawing.	3. Industrial Drawing.	3. Algebra.	3. Algebra.	3. Industrial Drawing.	3. Industrial Drawing.
4. Zoology.	4. Zoology.	4. Horticul., Landscape Gardening.	4. Horticul., Landscape Gardening.	4. English Literature.	4. English Literature.	4. English Structure.	4. English Structure.
5. Phys'c'l Geography, Meteorology.	5. Agricul. Chemistry, Meteorology.	5. Organic, Household Chemistry.	5. Organic, Household Chemistry.	5. Physics.	5. Physics.	5. Adv'd Arith., Book-keeping.	5. Adv'd Arith., Book-keeping.
6. Logic.	6. Logic.	6. Household Economy.	6. Household Economy.	6. Industrial Drawing.	6. Industrial Drawing.	6. U. S. History, Industrial Drawing.	6. U. S. History, Industrial Drawing.

MECHANIC'S EDUCATION.

Because of the adaptedness of the leading course to the wants of the intelligent mechanic, it has been found practically unnecessary to diverge from the Farmer's Course. Additional studies, specially adapted to the mechanic's use, will be furnished in a Post-Graduate's Course.

If it be urged that the distinctively agricultural knowledge taught in the Farmer's Course is not directly valuable to the mechanic, we reply that, admitting the point for the purpose of argument, yet: 1. This knowledge is of more practical value to the mechanic than is the Latin, Greek, or a half dozen other things embraced in the usual course preparatory to the professions; 2. That the great majority of Kansas mechanics will also be more or less engaged in agriculture; 3. That those studies in the course which are directly valuable to the mechanic, together with the shop facilities, offer a better mechanic's education than can be elsewhere found west of the Alleghanies.

INDUSTRIAL DEPARTMENTS.

Having knowledge in the head is one thing; ability to use it with the tongue, fingers or feet is quite another thing. Both are vital to success in practical life. A man might thoroughly understand the theoretical principles of carpentry, and yet, not having used the tools, be wholly unable to earn carpenter's wages. So in all other vocations. Accordingly, instruction is given in the following well-equipped Industrial Departments, and every student is required to recite in some one of them, as selected by the pupil or parent:

FOR MALE STUDENTS.	FOR FEMALE STUDENTS.
The Farm.	Dress-making.
The Nursery.	Printing.
Carpentry.	Telegraphy.
Cabinet-making.	Scroll-sawing.
Turning.	Carving.
Wagon-making.	Engraving.
Painting.	Photography.
Blacksmithing.	Instrumental Music.

Each of these departments is conducted exactly as in daily life, and aims to give precisely the drill received by an apprentice. No charge is made, either for tuition or material, from male students taking the Industrials provided for them; nor from female students taking the ones provided for them, except in the Department of Instrumental Music. Male students taking either Printing or Telegraphy are charged $1 per month for the use of material and instruments.

DEPARTMENTS OF INSTRUCTION.

DEPARTMENT OF AGRICULTURE.

PRACTICAL AGRICULTURE.

Second Year:—General principles of breeding; history and characteristics of breeds; adaptation of different breeds for special purposes and localities; implements of simple tillage; mechanical principles involved in their construction; act on of the plow upon soil and subsoil; principles of draught; influence of different adjustments upon draught; use of the dynamometer; value of hoed crops in a system of husbandry; the cultivation of corn and roots; soils that need drainage; how to lay out a system of drains; house drainage; sewerage.

Fourth Year: General view of agriculture, ancient and modern; agricultural progress of the last century; relative advantages of mixed husbandry and special farming; the selection and arrangement of the farm with reference to the system to be pursued; rotation of crops; general advantages of a rotation; the best rotation with reference to disposition of labor, production of manure, and extermination of weeds; pasturage and production of grain and forage crops; manures, how best housed and applied; composting manures; commercial fertilizers; systems of feeding; stall feeding; steaming food; soiling; experiments in feeding; farm buildings; farmhouses; barns.

FARM ECONOMY.

Woman's Course, Fourth Year: Dairy products as human food; influences affecting character of milk; manufacture of condensed milk; the factory system and household plan of cheese-making; treatment of rennet; general process of cheese manufacture; subsequent t eatment of cheese; butter-making; creameries; "deep" and "shallow" setting systems; general process of butter-making; packing and preserving butter.

DEPARTMENT OF BOTANY AND PRACTICAL HORTICULTURE.

This department embraces a course of instruction in the elements of botany, structural and systematic, with a constant attention to the practical application of botany to the farm, orchard, garden, nursery and forest; also a course of lectures on Landscape Gardening. The instruction is mainly given by lectures, accompanied by regular practical drill in all the work of the fruit, vegetable and flower gardens, nursery, orchard, vineyard and ornamental grounds.

The lectures in Practical Horticulture embrace the following and kindred subjects: The relation of atmospheric motion, moisture and temperature to horticulture; seeds, the means of collecting and preserving; propagation, by seeds, cuttings, layers, suckers, grafting, budding; care of young plants; improvement of varieties; management of commercial and farm nursery; modes of pruning; the orchard; fruit suitable for orchard and garden culture; the flower, vegetable and fruit garden; importance and mode of forest culture; shelter belts and their influence; weeds and useful plants; noting the species of trees worthy of culture, either for profit or ornament.

LANDSCAPE GARDENING.

The lectures on Landscape Gardening not only unfold the accepted principles of the art, but at the same time give special attention to such applications of the art as may be made universally available in laying out and improvement of farms and the homes of the people. These lectures are accompanied by a practical drill in in the work of laying out and plotting grounds topographically.

CHEMICAL DEPARTMENT.

PHYSICS.

This includes a full consideration of the laws of mechanics, of liquids, gases and vapors, weights and measures, and specific gravity, followed by experimental study in the Physical Laboratory of the laws of heat, light, with spectrum analysis, electricity and magnetism, and the relation of these forces to plant and animal life. Text-book, Ganot.

INORGANIC CHEMISTRY.

This course is opened with a careful study of chemical forces and the laws governing chemical combination. The elements, with their compounds, are next considered in succession as to their history, properties, manufacture, and especially with regard to their uses on the farm and in the arts. These lectures are accompanied by an extended course of laboratory practice in which each student performs every experiment with his own hands. Text-book, Eliot & Storer.

ORGANIC CHEMISTRY.

This comprises a thorough study of the chemistry of the organic compounds, the composition of plants and of the various compounds derived from them. Constantly accompanied by laboratory practice.

CHEMICAL ANALYSIS.

In this course each student is furnished his stand in the Qualitative Laboratory, completely furnished with apparatus and chemicals for his own use. He here performs analyses of farm soils, plant ash, commercial manures, ores, mineral waters, commercial compounds, etc. After completing this course, he enters, if he desires, the Quantitative Laboratory, where he pursues a full course in quantitative analysis. Text-book, Kedzie's Manual.

AGRICULTURAL CHEMISTRY.

This includes a thorough consideration of the application of chemical principles to the economy of the farm; the origin and formation of soils; the classification and composition of soils; the analysis of soils and their adaptation to purposes of production; the composition and use of manures; composting; chemistry of farm operations, such as plowing, fallowing, draining, etc. Text-book, Johnson's "How Crops Feed."

METEOROLOGY.

Embracing the composition of the atmosphere; atmospheric pressure; temperature and humidity; laws of storms; rain, snow and atmospheric electricity. A full course in meteorological observations is taken under direction of the Signal Service. Text-book, Loomis' Meteorology.

MINERALOGY.

This includes the study of the laws of crystallography, with the properties, forms and uses of the principal minerals of the United States. Blowpipe analysis forms a very important part of the course, each student being required to name and identify a large series of minerals. Text-book, Dana's Mineralogy.

HOUSEHOLD CHEMISTRY.

A course of lectures on this subject is yearly delivered to a class of young ladies. The course embraces the chemistry of cooking; the composition of food; bread; tea, chocolate and coffee; butter and milk; ripening and preservation of fruits, etc.

SPECIAL COURSES

Are constantly in progress in Assaying, Pharmaceutical Chemistry and Photography.

ENGLISH LANGUAGE.

Words are simply tools used to express ideas; and, since the vast majority of our communications are made by the employment of spoken or written words, skill in using them is as profitable to the industrialist as dexterity with the needle is profitable to the seamstress. The direct aim of the course is to make the student skillful and intelligent in handling the machinery called language, just as an engineer handles a locomotive; and no drill will be omitted, or effort spared, to gain this end. Apart from the course itself, which is far more practical and complete than that usually found in literary colleges, the constant attention given this subject by all the departments, and especially the practice required in the printing classes, affords superior advantages to the student.

DRILL IN ENGLISH.

"As grammar was made after language, so ought it to be taught after language."—*Herbert Spencer.*

Drill in English embraces the following topics:

Sounds of the language; drill in producing the vocal, sub-vocal and aspirate elements with accuracy, distinctness and volume; vowels, consonants.

Letters: Form; power; rules for spelling, drill.

Words: Signification, properties, modifications, variations, relation and dependence.

Sentences: Drill in statement of ideas; description, clearness, terseness, vigor; business letters, discussion; capitalization; syllabication; punctuation; construction and analysis of sentences; elements, uses and names; criticism of compositions printed as written; proof reading; grammatical construction; superfluous words and clauses; drill in reading, speaking and penmanship.

Text-books: Webster's Academic Dictionary; Lee & Hadley's Advanced Lessons in Language.

Pupils deficient in spelling, etc., should enter the printing class, the printing-office being the work-shop of language.

STRUCTURE OF ENGLISH.

ELEMENTS OF WORDS.—The end aimed at in this study is to learn everything about words which will aid in their effective use. Among the topics included are:

Roots: What are they; their origin; their force and value as an element of language; the manner of their growth into different parts of speech.

Stems: Their derivation; their offices and properties; their relation to other parts of words.

Prefixes and Suffixes: The several sources whence derived; the relation of their force or significance to those sources; explanation of the laws and principles governing their use along with stems.

Compounds: Their value; their properties and uses; the laws governing their formation.

Synonyms: Definitions; causes of their abundance in English; the principles to be observed in choosing among them, to express a thought.

Criticism: This constitutes a prominent part of the exercises of the pupil through his whole course in the study of English. It not only diversifies and enlivens the class-room exercise, but reduces to practice the principles of the structure of the language. By this means, the student acquires not only a knowledge of English, but readiness and accuracy in speaking or writing it. The exercises in criticism embrace not only examination of selected matter, but original composition.

ELEMENTS OF SENTENCES.—The purpose in view in studying this subject is not to traverse the ground gone over in the study of grammar, but to fix in the mind of the student a clear understanding and remembrance of names, the properties and offices of the several classes of words entering into an English sentence, by showing him the reason of things; to make more simple, as well as interesting and practically useful, a study otherwise "dry and unprofitable" in many cases, by explaining the reason of the verbal forms and changes, the rules and maxims he is to remember and observe in his use of language. In the same manner he is conducted through a study of the mutual relations and dependencies of the several elements making up a sentence.

MATHEMATICAL DEPARTMENT.

Figures and lines, like words, are only instruments with which to convey ideas, or perform operations that cannot be easily done without them. The arithmetical principles used in business are few and simple; but accuracy and rapidity in computation are only gained by practice. College graduates often fail to retain clerkships, not because they do not know *why* given operations are performed, but because they can neither add, multiply or divide with that habitual correctness which renders their work reliable.

DRILL IN ARITHMETIC.

The chief design of this study is to make the student expert in the use of numbers, as employed by the industrialist for profit. The occupation of a successful farmer demands the application of every principle of practical arithmetic, and is taken as a starting point, rather than that of an abstract system. Beginning with a simple cash account, book-keeping is gradually developed to the full extent of its real utility. The areas of fields, expense of crops, construction of houses, sales of produce, and investment of capital, involve all the fundamental operations, and those of profit and loss, commission, taxes, insurance, exchange and stocks. Following this line, the student, so far from hammering away at "pure" science draws from the mathematical store-house what he needs, and sees why he needs it. Accuracy of calculation and posting, rather than a *mere* comprehension of the principles, is aimed at. Besides the recitation-room drill in business forms, practice in the field is also given. Estimating the number of cords in a pile of wood said to be 100x4x4 feet is one thing; measuring a pile of wood through which any number of cats may be harmlessly thrown, and in which four feet sticks are the exception, is quite another and more difficult thing.

ARITHMETIC AND BOOK-KEEPING

Is a continuation of the above, having the same purpose and adopting such methods as the necessities of the class indicate. Thorough instruction in the principles and forms of business law is given. It will be seen that this method of teaching book-keeping, besides ensuring arithmetical practice, develops practical skill in that important art.

ALGEBRA.

Algebra is included in the course as a preparation for the study of Surveying.

DRAWING.

The practical value of Industrial Drawing can hardly be overestimated, first, because its study is the best drill for the development of the perceptive faculties, which are the ones most employed in daily life; and, second, because the working classes make a far greater use of lines than they do of figures. A farmer follows a line when laying a straight furrow; the carpenter uses the square and rule twenty times as often as he does figures; and a woman in cutting a pattern, or deciding that one bonnet is prettier than another, does so by the line or "form." So that either in its direct application, or in the exercise of that taste which comes from skill in using lines, this branch of mathematics is quite as important as a means of "mental discipline" as is the branch of computation, and is of far greater daily use. The admiral system of Prof. Walter Smith, Art Director of Massachusetts, is thoroughly followed through the grades of Free-hand, Geometrical, Object, Model, Perspective, Mechanical and Topographical Drawing, during the terms indicated by the Course of Study. In addition, constant practice in the application of lines to metal and wood is furnished in the Blacksmith, Carpenter, Turning, Scroll-sawing, Carving, Engraving and Printing shops, and to fabrics in the Sewing Department.

PRACTICAL GEOMETRY.

Not one farmer in a thousand ever uses the transit in surveying his land, the testimony of the county surveyor being decisive in court; but every farmer makes countless applications of lines and angles in laying off fields, roads, gardens, planning houses, determining levels, etc. The object of Practical Geometry is to teach the properties and uses of angles, and to make the student skillful in the application of lines to the field by the use of such simple instruments as are always within reach, or within his ability to construct; and accurate in the transferring of plans to the grounds, board or block.

PRACTICAL SURVEYING.

The drill in the use of figures and lines given by the mathematical course as above indicated, renders the mastery of surveying an easy task. There is no calculation made or formula used by the working engineer which cannot be readily understood and performed by a skillful arithmetician after proper instruction. The hand-book of the engineer is accordingly supplemented with such special guidance as is found necessary for a full comprehension of the mathematical principles and their applications; and extended field practice is required in the use of the compass, level, transit and theodlite.

STUDIES SPECIAL TO WOMAN.

Besides the studies already indicated, attention is called to the following:

SPECIAL HYGIENE.

As shown in the course, one term is devoted to the study of Physiology, from the text-book of Dr. J. C. Dalton. This is followed in the fourth year by a course of lectures to young ladies by Mrs. Cripps on the subject of Hygiene, embracing such instruction in hygienic matters as are valuable to woman.

FARM ECONOMY considers those affairs of the farm which usually come under the supervision of the farmer's wife or daughter, and which are not included in "gardening" or "household economy;" such as butter and cheese-making, dairy management, etc. A course of lectures is delivered by the Professor of Practical Agriculture. See heading, "Farm Economy."

GARDENING is included in Practical Horticulture. See heading, "Landscape Gardening."

HOUSEHOLD CHEMISTRY. See heading, "Household Chemistry."

HOUSEHOLD ECONOMY

Follows Household Chemistry and consists of lectures by Mrs. Cripps in the art of house-keeping, embracing cookery, domestic management, and kindred topics. Many elderly gentlemen sufficiently know, and more young gentlemen will duly discover, that systematic knowledge of how cooking ought to be done is luminously different from the ability to do it. Instruction without practice can effect but little. Accordingly a kitchen laboratory has been completely furnished, and affords every facility for drill in the art of cooking. This drill chiefly differs from that of a kitchen in the respect that after a girl has learned to wash dishes or pare pototoes she is not kept everlastingly at either. After full trial we have found it just as feasible to give this practice, with profit and pleasure to the pupil, as it is to give laboratory practice in chemistry—and no more expensive.

THE INDUSTRIALIST

VOL. IV. MANHATTAN, KANSAS, SATURDAY, NOVEMBER 30, 1878. No. 33.

THE INDUSTRIALIST.

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Address A. A. STEWART, Manhattan, Kas.

INDUSTRIAL EDUCATION.

Not the least of the things of which Kansas has a right to be proud is its magnificent educational system. At the start a wise and vigorous policy was adopted for the education of its youth; and ever since, whether in war or peace, poverty or plenty, the State has steadily developed and carefully fostered its various educational agencies. In addition to its munificent endowment of the public schools, it has provided higher institutions for three distinct kinds of instruction, namely, normal schools for the special training of public school teachers; a university for the education of those proposing to enter the professions of law, medicine or theology; and an agricultural college for the practical education of those who will engage in any of the "industrial professions or pursuits," as distinguished from the "learned professions." The relative demand for the three forms of education is indicated by the proportion in which the citizens of Kansas follow these vocations, as shown by the last United States census. Of every one hundred persons engaged in a vocation by which money is gained, the ratios were as follows:

Normal education:		
Teachers	1.13	= 1.13
Professional education:		
Ministers	0.43	
Lawyers	0.55	
Doctors	0.73	= 1.71
Industrial education:		
In agriculture	59.13	
In manufacturing and mechanical	14.63	
In personal service	13.89	
In trade and transportation	9.51	= 97.16
		100.00

AGRICULTURAL COLLEGE.

Recognizing the need for an education which should especially prepare the rising generations for an intelligent and successful practice of those vocations which are followed by ninety-seven out of each hundred of its citizens, the first institution endowed and put in operation by the State was its Agricultural College, so named because of the fact that agriculture is, both numerically and actually, the chief of these vocations. The title, "Agricultural" College, is apt to mislead those who are not familiar with the above fact, and also with the further fact that the acts of both Congress and of Kansas provide for an "industrial," as distinguished from a "professional" education.

ENDOWMENT.

The endowment received from the United States Government consisted of 81,601 acres of choice land, all of which had been sold at date of last report, except 31,461 acres now on the market. The proceeds from the sale of lands are invested in school bonds, and the securities in hand amounted to $238,101.28 by last report. The annual income from this endowment is about $20,000, out of which all expenses of instruction are paid. The only aid received from the State is for the erection of buildings, in accordance with the conditions of the congressional grant. This is the only one of the State's institutions which is not dependent upon the tax-payer for its maintenance.

LOCATION.

It is situated one mile from Manhattan, Riley county, one hundred and twenty miles west of the Missouri River, in the heart of the finest agricultural State in America. The Kansas Pacific Railway, with its connecting lines, gives speedy communication with every quarter.

COURSE OF STUDY.

The course of study is shaped with direct reference to giving an industrial as distinct from a professional education. It makes the pupil intelligent and expert in the use of the English language; in the use of numbers as employed by the farmer, book-keeper and engineer; and in the use of lines as employed by the carpenter, painter and architect. Words, figures and lines are tools which all men use. It then gives thorough instruction and laboratorial or field drill in the following sciences as essentially useful to an intelligent and successful farmer: Physiology, Practical Agriculture, Natural Philosophy, Botany, Entomology, Practical Horticulture, Landscape Gardening, Inorganic Chemistry, Organic and Analytical Chemistry, Surveying, Geology, Mineralogy, Zoology, Meteorology, Agricultural Chemistry, Political Economy, Practical Law and Logic. It has an equally practical and effective course for the education of woman as a woman, instead of as a man, and as a worker instead of as a butterfly. Then, it has a well-stocked farm and nursery, and well-equipped shops, for giving boys practice in farm and nursery work, and in wood and iron work, and for giving girls drill in dressmaking, printing, telegraphy, carving, engraving and music.

The Westward Tide.

Whatever the "Star of Empire" may be doing these days, there can be no question but that the people are coming West. In a residence of twenty years, I have never seen anything to compare with the stream of immigration that is now flowing westward. Every railroad is doing its utmost to bear the tide along. Long trains, crowded with immigrants, pass by every day, carrying the unceasing multitudes on into "the empty continent" beyond us; for the plains beyond, between here and the mountains, are almost a continent of themselves.

And these are not the chronic frontiersmen who move on to keep out of the way of civilization. But they are mostly people of the better class — farmers and mechanics and the better grade of laborers. They are people who have been "well-to-do," but who have suffered in the revulsions of the past few years, and come West to begin again. Thousands of these from all over the land, who have been accustomed to comforts and luxuries and refined surroundings, are going back in the woods of Michigan and out on the prairies of the far West. Many of these will be disappointed; many of them, like the prodigal son, will "spend all," and then go back to their father's house. But the great mass come to stay, and will become founders of new homes.

There are many reasons for this increased flow westward. One is the financial disasters which have thrown so many out of employ and unsettled so many in their business. But another is the increased facilities for travel offered by our railroads. Immigration to the far west is no longer a dreary pilgrimage of weeks, but an easy railroad ride of a few days sets the immigrant down at his destination. And he no longer waits half a generation before neighbors thicken around him, but the process of settlement is so rapid that a nation is born in a day, and schools and churches and civilized institutions spring up at once.

Another cause that has contributed very largely to this same end is the effort made by these railroads to scatter information and foster settlements. In old times railroads followed business. Now they go on ahead and meet business. Through land grants, local subscriptions and mortgage bonds, great lines of road are built out hundreds of miles into the wilderness. They must then create that on which they feed, and secure the settlement of the country in order to furnish business for their trains and sale for their lands. They have, therefore, scattered everywhere papers and hand-books and maps setting forth the attractions and capacities of these western lands, as no bureau of immigration could ever do. It may also be added that, in the main, they have not gone beyond the record; in fact, it is hardly possible to overstate in regard to the richness or productiveness of these lands.

Another cause which may have contributed to this same result is the reaction from the town-seeking tendency of a few years ago. After the war everything tended to the towns, and agriculture suffered, and farm laborers could not be obtained. Everything that centered in towns was overdone, while there has never been a glut of farm produce, with all the immense crops raised; and farming was never more prosperous than during these years of general disaster. There have been good crops, fair prices, and ready sales, and the man who had a farm — paid for — was a happy man.

This is having its effect, and farming is stepping to the front as a desirable and attractive occupation. The tide is now turned that way. This is doubtless one reason that the rich lands of the West are in such demand, and that the rush for them is so great.—*Dr. Cordley, in Chicago Advance.*

The Farmer's Calling.

That farming is as sure, stable, honorable and remunerative a business as one can enter upon, has been asserted and proved over and over again. It is true that other kinds of business — trade, commerce and some kinds of manufacturing,— that speculations of various kinds — banking and joint-stock companies,— have, especially of late years, attracted much attention, and have been popular with dashing and ambitious young men. Still, in the experience of a few past years, the statistics of business disasters and failures, the moral wreck of character and the crash and ruin of men who were reputed rich, have proven that farming is an industry less fluctuating, less depressed by hard times, less subject to failures — a pursuit in which temptation to dishonesty has less influence and in which men have pursued the even tenor of their way with less anxiety and with less exposure to financial ruin and wreck of moral character — than any other business. That colossal fortunes have been, here and there, now and then, built up by speculation, sharp practices, gambling in stocks, spoliation of labor and by indirect and direct robbery, we cannot deny; but those fortunes, however large and glittering, do not stand up to the public gaze as monuments of honor, of patient industry, of painstaking, honest labor, but they tower rather as beacons, warning men to beware of the hidden rocks and treacherous quicksands on which so many of life's voyagers have been wrecked. These fortunes have no solid foundation to rest upon, and when the floods come and the winds blow, they fall like the house built upon the sand. Farming is a business that rests on a sure foundation. It demands honest work. It is not built up by the spoliation of others. Its gains, though they may be small, are legitimate and honorably earned. There is more capital invested today in agricultural pursuits than in all other industries combined. It pays more for the support of government and receives less protection and consideration from government than any other interest.

In looking at farming in the broad, full light of practical utility, of safe investments, of sure dividends, and of the best public service, we cannot help commending it and urging it upon the young as a pursuit upon the whole more satisfying, less hazardous, more useful, honorable and remunerative than any other business. It gives a scope to the intellect, a play to the imagination, a range to the affections, a field to the inventive powers, a work for hand and heart, which no other industry supplies.

But for any adequate realization of the advantages, the remuneration and the satisfactions of farming, there must be among our Patrons and farmers a high education, a better culture and a larger appreciation of and devotion to their own peculiar calling. They must see and feel its importance in its financial, social, moral and industrial bearings, and prepare themselves with as much zeal and earnestness by careful experiment, close observation, and persevering study, as those who propose to enter the learned professions, or the paths of science, or the study and the practice of the arts.—*Kansas Spirit.*

THE new artesian well which is being bored, under the direction of Mr. Richards, C. E., at Victoria, Spain, has now reached a depth of nearly 2,200 feet. The diameter of the bore is about twenty inches. The drills are worked by a thirty-two horse-power steam engine. All the machinery is described as being of the most perfect and effective character. It is hoped that one of these days the drills will reach a subterranean river capable of supplying the city with an abundance of the purest water.

Entomology in Schools.

Professor Saunders, in his address at the recent annual meeting of the entomological society of Ontario, of which he is president, stated that on a model farm in Guelph, Canada, the important study of insects injurious to agriculture, is regularly taught, with the aid of a fair collection of specimens; and he made the good suggestion that every public school should have its museum of natural history, where the children can learn, with the objects before them, the names and habits of the common birds, insects and plants with which they must constantly come in contact. Such studies, he justly thinks, would "strengthen the intellect and cultivate the memory and other faculties of the mind more thoroughly than many of the abstract studies now especially designed for the purpose, while the practical value of such knowledge to the fortunate possessor in after life can scarcely be over-estimated."—*Spirit of Kansas.*

We Must Educate.

The object in obtaining more specific information is to enable one to do better what they can perhaps even now do very well. The more one knows about the principles which underlie the profession he is following for a livelihood, the better he ought to be able to do it and succeed in it.

Theory and practice are both good. In the vigorously contested race of life, we must rely on practice. Both should therefore be combined in our system of education, in the sense of a specific education, for the better accomplishment of practical results. Sentimental and fanciful theories must give way to the practical. We have had enough of the superficial system of education. What we want now is a system that will be practical and pave the way for paying results, and to secure these we must be efficient workers and know why this or that theory produced or failed to produce desired results.

The farmer's boy should now have such educational advantages as will enable him to work old and nearly worn out lands and obtain remunerative crops from them. True the clay soils in this or the adjoining States may not be seriously exhausted except, perhaps, of one or two elements, yet there is but one best way of restoring them. These lands must be restored or the young men will abandon them for other more distant and fertile lands, and the community will lose one of its most valuable elements, and the increased impoverishment of the soil will be continued. In the direction of specific education, every young farmer should have sufficient knowledge of mineralogy and geology to understand the composition of the soil he is to cultivate. He should also have such knowledge of chemistry as will enable him to ascertain what plant-food the soil requires in order to make it produce remunerative crops. "It is a fact," says Prof. Orcutt, "which is beyond controversy, that every farmer who is ignorant of chemistry, works in the dark, and is liable to misapply his labor and lose all." The mistake of mixing quick limes with ammoniated manures will suffice to show the importance of correct knowledge. Such information, coupled with the practical knowledge of where and how to till the soil, would be one step forward in the onward march to progress, and show by paying results that brain work is the most fitting and best ally of hand work on the farm.—*Grange Bulletin.*

Is the decline in British agriculture to be attributed to the fact that there is but one agricultural school in the kingdom, that being the one at Cirencester, established only about eight years ago?

THE INDUSTRIALIST.

SATURDAY, NOVEMBER 30, 1878.

JNO. A. ANDERSON, Managing Editor.

ASSOCIATE EDITORS, MEMBERS OF THE FACULTY.

THE twelfth annual meeting of the Kansas State Horticultural Society, or gathering of the horticulturists of the State, will be held at Ottawa, on Dec. 3d, 4th and 5th next. All friends of fruits and flowers are invited to attend. The railroads will give a reduction of fare to all attending the meeting, and the citizens have offered free entertainment.

OF course it isn't proper to put anything of a political nature in the columns of the INDUSTRIALIST, it being the organ of a State institution; and therefore we won't do it. But, if it were proper, we would take this method of expressing a very hearty appreciation of the courtesy and kindness so generally shown to the managing editor of this paper, during the late campaign, by the editorial fraternity of Kansas.

Female Education.

Our educational system is based upon the idea that the mind, like the body, grows upon what it eats, and is strengthened by exercise; and that some kinds of knowledge are more nutritive to one faculty than to another, or give better gymnastic drill. Thus, the imagination is enriched by familiarity with the best poets; the perceptive power is strengthened by the mastery of those sciences requiring the closest observation; and the reasoning power, by the labor of welding link after link in a mathematical or logical demonstration. Supposing the idea correct, should the same mental diet and exercise be given to the girl that is prescribed for the boy? What is to be aimed at in her education? Is her mind to be made as much like his as possible, that she may perform his work; or, are her faculties to be developed along their own natural line, that she may perform a woman's mental work in the best way? In other words, do we want to develop manliness or womanliness in woman? If the former, then her educational regimen should be the same as the boy's; if the latter, it should be determined by its supposed effect upon the faculties sought to be strengthened: in each case, due respect being paid to the periodicity of her mental action.

Apart from bodily structure, is it advisable to have mentally-male women any more than mentally-female men? Does either man or woman desire to marry a mental, any more than a physical, counterpart? Would there be as much pleasant variety in the home, were it an exact intellectual repetition of the street, and were the same facts viewed from the same standpoint, and argued, in the same way, to the same conclusions? If so, men would only associate with men; and home would become merely a continuation of the day's business. The truth is, that man craves something intellectually different from the foil and thrust of daily life, as does the woman something different from her routine; and this craving of nature protests alike against intellectually masculine women and feminine men. Or, would posterity be the gainer by the transmission of identical mental qualities? If so, family intermarriages would not be physiologically prohibited by the death penalty of insanity and idiocy.

Individuality is the law of nature, everywhere stamped on matter and mind. Without it, variety is impossible; and nature abhors monotony. Identicalness only characterizes the articles turned out by machines which man builds; never those from machines which God builds. The mechanicalness of the attempt to make the mental woman an exact copy of the mental man clearly indicates that man, not God, originated it. It is the twin brother of the mechanical garden; in which, nice little beds, straight-sided and right-angled, are separated by lean little walks cut off, in lengths to suit, from the post-holes of space; and where wayward plants are perpetually clipped into primness, and the surrounding trees are eternally abused for not growing in line; all of which, every one can see, is a vast improvement on the valleys, hills and plains of a continent, with its winding streams, wild flowers, forests, and snow-veiled peaks! However desirable that nature should be conformed to such a standard, it would cost a deal less to conform the standard to nature; and possibly the world might be just as beautiful! Perhaps, in the matter of female education, as in that of gravitation, it may be as well for us to follow the laws of nature: certainly the tumbles will be fewer, the pain less, and, likely, the progress greater.

An Agricultural College in Court.

Among many other good things, we find the following clipping in the *Western Homestead*, W. S. Burke, publisher, Leavenworth:

The Hon. L. P. Poland, of the Vermont Legislature, seems to be going for the Agricultural College of that State, as he introduced a bill providing that any ten voters of the State may complain to the Supreme Court and call for a decision of the question whether the Vermont University and the State Agricultural College have failed to carry out the intention of the act appropriating money to the Agricultural College. The bill is supplemented by a resolution, charging the utter failure of the College to perform its duty, and instructing the Judiciary Committee to investigate the matter and report to the House by bill or otherwise. The bill was passed. This, to quote a handy old adage, is taking the bull by the horns. It devolves upon the Supreme Court the important point of deciding what is the "duty" of an agricultural college, for the deciding of what is, seems to precede that of what is not. If a "complaint" be made by ten voters, the Supreme Court will be called upon to decide the first case of the kind, probably, that has ever come before any Court. Hence, no precedent by which to be guided in their decision.

The principle is well settled and universally recognized that when an individual, by will or deed, donates property for a specified purpose, his executors or trustees are bound to use such property for the object designated and no other. But when the U. S. Government donates land for a specified purpose, the principle is by no means settled that trustees shall use the endowment for the given object; and, as regards grants for agricultural colleges in the several States, the general practice of trustees has been to use the funds for any and every other kind of education except industrial education.

If Congress should appropriate half a million of dollars to each State for the maintenance of a plow factory, and the Legislatures should use the money for the manufacture of astronomical telescopes or gilt-edged Hebrew dictionaries, people generally would indulge a faint suspicion that the Congressional appropriation had been grossly perverted; and, in due time, there would be an able-bodied row about it. That illustration is not a bit too strong when one seeks to set forth the difference between industrial colleges for the education of the working classes and universities for the education of the professional classes. Yet Kansas is the only State in the Union which has fully recognized this difference and squarely shaped its course accordingly. In a few other States, the agricultural college is a distinct institution, but in the great majority of cases it is only a "department" of some more or less high-toned "university." And, too, in the few States where the agricultural college is a distinct institution, the course of study is precisely that of the professional colleges with "lectures on agriculture" added.

From the inevitable logic of things, such colleges must grind out precisely the same graduates as do the professional colleges; and, therefore, such colleges must be and inevitably will be failures, in the matter of giving a practical industrial education as distinguished from a gilt-edged professional education. Nobody claims that the daily work of the lawyer is in any respect like that of the farmer or mechanic. Nobody claims that the same knowledge, plant growth for example, has the same practical value to the lawyer that it has to the gardener. And how anybody, who hasn't an ax to grind, can claim that the best education for the future lawyer is the best education for the future farmer, is one of those dark and bloody mysteries which defy all logic as well as all common sense.

And yet, with a few rare exceptions, the Congressional endowment for industrial education has been boldly and bodily gobbled up by the professional universities in the several States; and, after consummating the fraud, the several boards of trustees of these universities have patted themselves on the back for their arduous labor in the cause of "education," and have thanked a justice-loving God for enabling them to hook for their particular university so fat an endowment! Nevertheless, these same gentlemen would be the first to denounce the fraud of an executor who should use money bequeathed for the building of wagons for the very different purpose of making astronomical telescopes. Perhaps not more glaring than many other instances, but certainly more recent, is that of the University of California, which prides itself on having all the latest agonies in the shape of twelve-button "classics" and kid-slipper "fossils." Its board of management is a close corporation, filling all vacancies. The institution has a fine endowment in its own right. And it now seeks, by a clause in the new constitution of that State, to forever secure to itself the million or more granted by Congress to an "agricultural college," and which million or more it gobbled several years since, despite the protest of the farmers and mechanics of that State.

We believe in the worth of professional education to the professional classes as much as does any man living, and in the obligation of the State to furnish the appliances for such an education. We also believe in the worth of a practical education to the industrial classes as much as any man living, and in the obligation of the State to furnish it. We also believe in old-fashioned justice and square-toed honesty. And, from the standpoint of these three beliefs, the absorption of that agricultural college grant by the California University is, in practical effect, neither more nor less than a high-handed fraud — though such may not have been the intention of its perpetrators.

We have not the pleasure of an acquaintance with the Hon. L. P. Poland, of the Vermont Legislature, but we are very glad that there is such a man; that he has introduced a bill providing a way of bringing judicial power to bear upon the perversion of the endowments of agricultural colleges; that the bill is a law; and that it is now possible, in one State at least, to protect the interests of the working classes against the avidity of the professional educator.

THE INDUSTRIALIST.

SATURDAY, NOVEMBER 30, 1878.

Average temperature for the week, 36°.58; lowest, 15°. Mean height of barometer, 28°.74.

Several new students have entered the College during the last two weeks.

Among the visitors from abroad this week were Governor J. P. St. John, ex-Lieut. Governor M. J. Salter, and Rev. J. W. Clock.

Prof. Shelton has been conducting some very interesting experiments with corn. We cannot give the results now, but hope to do so soon.

The carpenters and plasterers have taken possession of the Congregational Church, and there will be no services there until further notice.

We ordered paper some weeks ago, but it has not yet arrived, and we have been compelled to print a portion of this week's edition on very inferior paper.

Prof. VanDeman went home on Friday, and will be absent all next week. During his absence he will attend the annual meeting of the State Horticultural Society.

The present term will close in less than three weeks. In the language of another, we desire to rise and exclaim: "Where in the world has this term stowed itself?"

Thanksgiving was duly observed on Thursday last, in consequence of which fact many a turkey has gone down to an "untimely grave, unhonored and unmourned." How sad!

President Anderson will deliver his Kansas lecture at the Presbyterian Church, in Manhattan, next Thursday evening, for the benefit of the Ladies' Benevolent Society of that church.

The indications are that we will have a much larger attendance of students next term than we have now. Parties from different counties have already been here seeking rooms and making arrangements for board.

The Botany class had its final examination in that study yesterday, and will devote the remainder of the term to lectures on Entomology. Next term, when the flowers come, this class will take up Botany again and engage in analyses of plants and flowers.

Prentis has written a new lecture, which he is delivering in different parts of the State. It is entitled "Funny Americans," and we commend its author as an excellent example of the same. The Webster Society is making arrangements to have Mr. P. favor a Manhattan audience with the lecture.

The students should remember that the regular admission fee to President Anderson's lecture, next Thursday night, is twenty-five cents, but that College students and those attending the Manhattan schools are admitted for ten cents each. This reduction will enable every student to hear what the President has to say about "Kansas."

George A. Gale has sold out his interest in the Manhattan Nursery to Mr. John Blachly, and the partnership heretofore existing between Todd & Gale has been dissolved. George has removed to Milford, and associated himself with A. B. Whiting in the lumber and grain business. Mr. Whiting is an old "residenter," is a very successful business man, and will unquestionably do the square thing with George.

The anniversary of the Order of Patrons of Husbandry will be celebrated by Manhattan Grange, No. 748, next Wednesday, by a basket dinner in Peak's Hall. In the evening, under the auspices of this Grange, Hon. George A. Crawford will deliver his lecture on "Kansas at the Centennial," in the same Hall. Tickets, twenty-five cents. Mr. Crawford is a brilliant writer and a fine orator, and it will pay to go and hear him.

Friday afternoon, Nov. 29th, the Alpha Beta Society was called to order by President Reed. As several of the debaters were absent, this order was passed. The first half of the *Gleaner* was presented by C. C. Chenoweth. We were much pleased with "Instructions for Contributors" and the "First Chapter of the Third Chronicles." In the second half, which was presented by Miss Abbie Browning, were some good articles, especially the poem entitled "The Gleaner." Committee on arrangements for the joint sesson made a partial report. Notice was given that an attempt would be made to change the constitution so that we shall be governed by Robert's Rules of Order, instead of Cushing's Manual. S.

The Websters met again last Saturday evening. Such a fact ought to be reported. Mr. Thomen was inaugurated as Librarian. Mr. Sloan was initiated as a member of the Society. All engaged in extemporaneous speaking as usual. Mr. Burr read a humorous selection. Mr. Morrow then presented the *Reporter*. This gentleman evidently is intended for an editor. His ability is ample, but in one thing he is deficient. His disposition is not such as will allow him to assume that lengthwise position in the editorial chair so peculiar to this class of professional men: he isn't a bit lazy. The members, being invigorated by the issue of the day (parliamentary law), took a more active part in the business exercises than formerly. After much discussion this question was selected: "*Resolved*, That railroads should be controlled by the Government." Affirmative, Moore and Salter; negative, Thomen and Morrow. For select reading, George F. Thompson. John Mann is our next editor. We held a special session on Tuesday for the purpose of acting upon an invitation to hold with the Alpha Beta Society a joint session. The invitation was accepted, and Messrs. Wood and Eckman were appointed as a committee of arrangements. The time of meeting is not specified, but it will be held at the close of the term. M.

ENERGY.

There is no genius that can be compared with the genius of energy. It will do anything that can be done in this world. What is it that makes the difference between the common stone-mason and his master? What is it that makes the difference between the deck hands of a ship and the captain of the vessel? What makes the difference between the day laborer of the machine shop and the master mechanic? What makes the difference between the man of means, of power and of distinction, and the insignificant and feeble man? To all these questions we would answer that it is energy that makes the difference. It is the invincible determination that makes the man; nothing else can do it. Talent, quick understanding, high birth, all are in vain, except there be real energy. What is it that makes the successful orator? Is it talent? Is it talent that makes any man's influence? Is it talent that puts men in high positions? that makes them the rulers of their fellow-beings? No; it is not talent that does all this, but energy, invincible determination.

The difference between one student and another of this College consists not half so much in talent as in energy. One student learns very easily, putting but very little time upon his lessons before he has them ready to recite well; while another one must put hours of hard study upon his lessons before he has them perfectly. The first of these has a mind which is quick to understand, while the mind of the other is said to be dull and hard of comprehension. Which of these students will attain the higher position in after life? Which will have the greater influence and the more friends? Is it not generally the one who puts hours of hard toil upon his lessons at school? And why? Because he who studies hard has been creating within himself a spirit of energy, by applying himself diligently to his studies; while the one who learns so easily as a general thing forgets just as easily, and instead of creating within himself a spirit of energy has created one of idleness, by wasting what he calls his spare time.

If we have energy, we shall never want for friends; for if we are unfortunate in our worldly affairs, men who see that we are energetic and willing to work will help us. It is a Spanish maxim that he who loseth wealth loseth much, he who loseth friends loseth more, but he who loseth his energies loseth all. P.

The following kind and fraternal notice which we find in a late issue of the INDUSTRIALIST, (a neatly-printed and ably-edited four-page paper), is heartily appreciated by us. The editor, J. A. Anderson, is President of the State Agricultural College, at Manhattan, Kansas. The paper is printed by the students, under the supervision of A. A. Stewart, Esq., Superintendent of the Printing Department. This College is a separate and distinct institution from any other university or college in the State, and is now the peer, in point of practical worth, of the justly-celebrated Agricultural College of Michigan.—*Cincinnati Grange Bulletin.*

NATIONALIST ITEMS.

Geo. Wake has taken charge of a lumber yard for Mr. Tyler.

Mr. Hays, the College blacksmith, has rented a house opposite Mr. Johnson's.

We understand that Gov. Anthony is to deliver a lecture in Manhattan sometime this winter.

Dr. Hunting Division, S. of T., intends having an oyster supper Monday night in Odd Fellows' Hall.

Former students of the College and town school will be pleased to learn that Lu Royster, who used to set type in this office, has passed through the Southern pestilence unharmed.

Any one who fails to hear Geo. A. Crawford's lecture on "Kansas at the Centennial" will miss a rare treat. He is one of the best lecturers in the State, and this is his masterpiece.

The Sons of Temperance will hold a public meeting at the Christian Church on Tuesday evening, December 3d, at 7½ o'clock. Interesting speakers have been engaged. Music by the string band, and good singing may be expected. Everybody invited.

The Public Hall committee made a partial report last Saturday, and was instructed to correspond with Mr. Carr and ascertain the probable cost of a two-story building, 50x130 feet, and report to a meeting to be held in Green & Hessin's office, Saturday evening, December 7th.

The editor of the *Nationalist* will commence a series of temperance meetings Dec. 1st, at Council Grove, and probably go from thence to Great Bend and Larned. His plan is to devote a week or so to a place, and thoroughly organize the temperance element for persistent and systematic work.

The social gathering held at Prof. Platt's on Thursday evening of last week, was one of the most pleasant we ever attended. It was given in honor of his son George, who left this week to attend school at Oberlin, Ohio. The invited guests, numbering over fifty, were nearly all present, and the double doors, leading from sitting-room to parlor, were thrown open, giving ample room to enjoy themselves in the ways best known to young folks. S.

COLLEGE ITEMS.

One of "our class," C. M. T. Hulett, has been suddenly called to his home in Johnson county, by the illness of his mother.

Chapel was visited on Wednesday, A. M., by Revs. Parker and Campbell. We are glad to have visitors to hear us say our pieces.

Prof. Shelton's class in agriculture are drawing up plans for barns, and if any farmer hereabouts wishes hints, he would do well to examine some of these plans.

President Anderson takes the class in parliamentary law, which was organized this week. First lesson consisted of some remarks on the nature and origin of the term, by President. Officers were elected to take charge at times when the class resolves itself into a deliberative assembly.

DIRECTIONS TO APPLICANTS.

TERMS OF ADMISSION.

Candidates for admission must be fourteen years of age, and pass a satisfactory examination in reading; arithmetic, through decimal fractions; and English grammar, to syntax. Classes are started at the beginning of each year in Drill in Arithmetic and Drill in English; and the pupil must have the knowledge above indicated, else he will be unable to retain position if admitted.

Pupils will be received at any time during the year, if able to pass an additional examination upon the subjects studied by the classes which they expect to enter. But they will find it greatly to their advantage to be present at the opening of each term, or as soon thereafter as possible.

GRADES.

Both the Literary and Industrial recitations are graded daily upon a scale of 100; and an examination of all classes is made at the close of each month. A student not attaining an average grade of sixty is promptly dropped to a lower class, or excluded from the Institution until able to do so. The work of grading is strict and uniform in all the departments, and this process is rigorously used for sifting out incompetent and indolent pupils; thus more than accomplishing all that is designed to be effected by a "high standard of admission." Hence, the student's continuance in the College wholly depends upon his own action.

The course is based upon the determination to make the labor required in the preparation of one industrial and three literary recitations as much as the average student can perfectly perform, in ten hours a day. We design to give the pupil the worth of the time expended at College; and, in order thereto, he must do a full day's work with brain or hand. Only those students who can maintain a standing of ninety in each study will be allowed to take more than the prescribed number of recitations; and no one will be permitted to have less than one industrial and three literary recitations.

RELIGIOUS.

Unless otherwise directed by parents, students are required to attend chapel at 8:30 A. M. on academic days, and divine service once every Sabbath.

EXPENSES.

There are no charges whatever for enrollment, attendance or instruction in the regular courses; nor are there any "contingent fees" for the repair of buildings, for the use of books or apparatus, for diplomas, or the kindred privileges usually grouped under the term "contingent." Male students are furnished instruction, the use of apparatus, instruments or tools, in both the literary and industrial classes marked out for them, without any charge. And the same is true of female students in the regular classes provided for them. Printing and Telegraphy are industrials primarily provided for the education of female students, and male students taking either of these are charged $1 per month for use of instruments.

Instrumental music is a fine art or "accomplishment," rather than a mechanical art. We do not place it among our "industrials" in the same sense, or for the same purpose, that we do those provided for teaching the trades. Accordingly, a fee of $12 per term, or seventy-five cents per week is required from female students for tuition and the use of pianos or organs.

The only charge made for material in either the literary or industrial departments is for the chemicals used by students in laboratory practice, which are furnished at wholesale prices, and amount to but a small sum.

Furnishing an absolutely free education is as much as can be reasonably asked; and the Institution neither boards, clothes, nor supplies the student with text-books. Boarding can be obtained in private families at from $2.75 to $4 per week. Washing costs from seventy-five cents to one dollar per dozen. Text-books, which can be procured in Manhattan, cost from $2 to $5 per term.

No student need expend over $5 per week; and many of our best pupils are living at $1.25 per week. Students desiring to "board themselves" can do so at from $1 to $2 per week. In a club of four young men, renting a house, the average cost to each for the term was $1.11 per week.

LABOR.

Manual labor by the students may be for either of two purposes: First, to acquire skill in a given art; second, to earn money. In the first case, the labor is educational; in the second, it should be paid for by the party benefited.

Educational Labor.—Manual labor in the recitations of the Industrial Departments, like mental labor in those of the Literary Departments, is purely educational and will not be remunerated. While the interest of the student will be held paramount in the direction of this labor, the practice necessary to dexterity will be required.

Remunerated Labor.—When the Institution needs labor on the Farm or elsewhere which is not educational, but simply for its own profit, and which a student is able and willing to perform, it becomes an employer instead of a teacher, and he an employe instead of a scholar. It pays for work, he works for pay. The relation between them is commercial, not educational; and both parties must act upon business principles. Hence, the College furnishes only such employment as its own interests require, and will pay according to the value of the service rendered at from seven to ten cents an hour.

AMOUNT EARNED.

It is impossible to predict how much a given person can earn, since that depends upon what he can do and what work there is to be done. Hence, it is wholly impossible for us to answer the question so often asked: "Do you think I can meet my expenses by work?" Some students make one-half their expenses, some the whole, and exceptional men have made more than expenses. As a rule, a faithful boy skilled in farm work can earn half his expenses on the Farm or in the Nursery. During the year he can ordinarily acquire sufficient skill in the wood or iron shops to enable him to make articles for sale. The whole question is one for his own consideration and decision. We can teach all who come, but cannot absolutely *promise* anything more. Hitherto we have refrained from holding out strong inducements respecting the amount of labor we might have to offer; but in view of the fact that during each of the last three years we have had more to do than the students could perform, we are inclined to give greater and positive encouragement on this point. Any boy who is in dead earnest, who is familiar with farm operations, and who can raise $50 to start with, should be able to carry himself through the four years' course. And certainly this places an education within the reach of every determined boy. As yet we are unable to offer similar advantages to girls, not requiring labor in the College departments which they can perform.

RULES.

1. Behave as a true man or woman should, at all times and in all places.
2. Attend to your own business promptly, thoroughly and courteously; and vigorously let alone that of other people.
3. Penalty: "Leave!"

PUBLICATIONS.

The "Hand-Book," published in 1874, containing a full discussion of the educational question and the aims of the Institution, will be forwarded to any one desiring it.

THE INDUSTRIALIST, a weekly journal edited by the Faculty and published by the Printing Department, contains original and seasonable articles on the Farm, Orchard, Trades, Sciences, and Education. Price, 75 cents a year. Address A. A. Stewart, Manhattan.

CALENDAR.

Fall Term 1878.—Begins Wednesday, September 4th, and closes Friday, December 20th.

TO NEW STUDENTS.

Bring the text-books you have been using. On arrival, first arrange for your boarding. A. A. Stewart, Sup't Printing Department, will furnish information, either by letter or on application, concerning boarding places or rooms for rent. Report to the President at 8:30 A. M., immediately after chapel, for enrollment.

For further information apply to Jno. A. Anderson, President, Manhattan, Kansas.

RAILROAD TIME-TABLE.

KANSAS PACIFIC RAILWAY.

PASSENGER ARRIVES.

No. 2, going East	11:14 A. M.
No. 4, going East	3:47 A. M.
No. 1, going West	5:10 P. M.
No. 3, going West	4:33 A. M.
No. 7 (freight), going West	8:15 A. M.

Nos. 1 and 2 run daily; Nos. 3 and 7 run daily except Monday; No. 4 runs daily except Sunday. Passengers with tickets are carried on No. 7.

GEO. C. WILDER, Agent.

METEOROLOGICAL RECORD.

Condensed by Prof. Failyer from the observations taken at the State Agricultural College, for the week ending November 28th, 1878. Latitude, 39°12′; Longitude, 96°40′; Height, 1,200 feet.

DAY OF WEEK AND MONTH.		Temperature. Max.	Min.	Mean.	Bar. Mean Hight.	Inches of Rainfall.
Friday	22			46°	28.63	
Saturday	23			45 .50	28.38	
Sunday	24			41	28.79	
Monday	25			31 .75	28.99	
Tuesday	26			29 .25	28.82	
Wednesday	27			34	28.77	
Thursday	28			33 .25	28.81	

Average temperature for the week, 36°.58.
Mean height of barometer for the week, 28.74.

KANSAS STATE AGRICULTURAL COLLEGE.

FACULTY.

J. A. ANDERSON, *President, Prof. Political Economy.*
M. L. WARD, *Prof. Mathematics and English.*
G. H. FAILYER, *Prof. Chemistry and Physics.*
E. M. SHELTON, *Prof. Prac. Agricul., Sup't Farm.*
H. E. VAN DEMAN, *Prof. Botany and Horticulture.*
J. E. PLATT, *Prof. Elem'y English, Mathematics.*
JNO. D. WALTERS, *Teacher Industrial Drawing.*
HON. D. J. BREWER, *Lecturer on Practical Law.*
T. T. HAWKES, *Sup't Mechanical Department.*
A. A. STEWART, *Sup't Printing Department.*
W. C. STEWART, *Sup't Telegraph Department.*
MRS. M. E. CRIPPS, *Sup't Sewing Department.*
W. L. HOFER, *Teacher of Instrumental Music.*

INDUSTRIAL EDUCATION.

The real value of an education to the student depends upon two things: First, the practical worth of the knowledge taught; and, second, the degree in which he makes it his own. Hence, the ability of any institution to give a practical education depends upon the kind and aim of the knowledge it teaches, and upon the thoroughness of the instruction therein. The State Agricultural College was directly endowed by Congress, and is guided by the State, for the specific purpose of furnishing to the industrial classes of Kansas a "practical" education, that is, "one fit for use." As its name indicates, and as the statistics of the industries of the State require, its chief work must be that of giving a useful and usable education to those who will engage in farming; and, therefore, the Farmer's Course must, from the nature of the case, be its main one.

FARMER'S EDUCATION.

Words and figures are merely instruments with which to record ideas. They are not themselves ideas, nor should they be made the chief end of an education. As a wagon is necessary to haul grain, so are they a necessary part of an education; but as the wagon is not the grain, so they are not the knowledge which the farmer converts into money. Hence, the classics and higher mathematics are not taught. But it will be noticed in the following course that so soon as the pupil acquires working skill in the use of the English language as a tool, and of figures and lines as mathematical tools, those arts and sciences which present knowledge that has a cash value to the farmer are taught as rapidly as their importance and thorough acquisition will permit. Studies numbered (1) and (4) in the second, third and fourth years are the spine of the course, to which the others are as ribs and muscle.

FARMER'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Practical Agriculture (advanced.)		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit. Economy, Practical Law.		3. Practical Geometry.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. Practical Agricul. (elementary).		4. English Structure.	
5. Agricul. Chemistry, Meteorology.		5. Organic, Analytical Chemistry.		5. Physics.		5. Adv'd Arithmetic, Book-keeping.	
6. Logic.		6. Practical Surveying.		6. Industrial Drawing.		6. U.S. History, Industrial Drawing.	

WOMAN'S EDUCATION.

Nearly one-half of our students are females, and the Woman's Course is prepared expressly for their liberal and practical education. We have no doubt whatever that practical men and women, who understand what it means and what it seeks to do, will fully endorse it.

WOMAN'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Farm Economy, Special Hygiene.		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit Economy, Practical Law.		3. Industrial Drawing.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. English Literature.		4. English Structure.	
5. Phys'l Geography, Meteorology.		5. Organic, Household Chemistry.		5. Physics.		5. Adv'd Arith., Book-keeping.	
6. Logic.		6. Household Economy.		6. Industrial Drawing.		6. U.S. History, Industrial Drawing.	

MECHANIC'S EDUCATION.

Because of the adaptedness of the leading course to the wants of the intelligent mechanic, it has been found practically unnecessary to diverge from the Farmer's Course. Additional studies, specially adapted to the mechanic's use, will be furnished in a Post-Graduate's Course.

If it be urged that the distinctively agricultural knowledge taught in the Farmer's Course is not directly valuable to the mechanic, we reply that, admitting the point for the purpose of argument, yet: 1. This knowledge is of more practical value to the mechanic than is the Latin, Greek, or a half dozen other things embraced in the usual course preparatory to the professions; 2. That the great majority of Kansas mechanics will also be more or less engaged in agriculture; 3. That those studies in the course which are directly valuable to the mechanic, together with the shop facilities, offer a better mechanic's education than can be elsewhere found west of the Alleghanies.

INDUSTRIAL DEPARTMENTS.

Having knowledge in the head is one thing; ability to use it with the tongue, fingers or feet is quite another thing. Both are vital to success in practical life. A man might thoroughly understand the theoretical principles of carpentry, and yet, not having used the tools, be wholly unable to earn carpenter's wages. So in all other vocations. Accordingly, instruction is given in the following well-equipped Industrial Departments, and every student is required to recite in some one of them, as selected by the pupil or parent:

FOR MALE STUDENTS.	FOR FEMALE STUDENTS.
The Farm.	Dress-making.
The Nursery.	Printing.
Carpentry.	Telegraphy.
Cabinet-making.	Scroll-sawing.
Turning.	Carving.
Wagon-making.	Engraving.
Painting.	Photography.
Blacksmithing.	Instrumental Music.

Each of these departments is conducted exactly as in daily life, and aims to give precisely the drill received by an apprentice. No charge is made, either for tuition or material, from male students taking the Industrials provided for them; nor from female students taking the ones provided for them, except in the Department of Instrumental Music. Male students taking either Printing or Telegraphy are charged $1 per month for the use of material and instruments.

DEPARTMENTS OF INSTRUCTION.

DEPARTMENT OF AGRICULTURE.

PRACTICAL AGRICULTURE.

Second Year:—General principles of breeding; history and characteristics of breeds; adaptation of different breeds for special purposes and localities; implements of simple tillage; mechanical principles involved in their construction; act on of the plow upon soil and subsoil; principles of draught; influence of different adjustments upon draught; use of the dynamometer; value of hoed crops in a system of husbandry; the cultivation of corn and roots; soils that need drainage; how to lay out a system of drains; house drainage; sewerage.

Fourth Year: General view of agriculture, ancient and modern; agricultural progress of the last century; relative advantages of mixed husbandry and special farming; the selection and arrangement of the farm with reference to the system to be pursued; rotation of crops; general advantages of a rotation; the best rotation with reference to disposition of labor, production of manure, and extermination of weeds; pasturage and production of grain and forage crops; manures, how best housed and applied; composting manures; commercial fertilizers; systems of feeding; stall feeding; steaming food; soiling; experiments in feeding; farm buildings; farmhouses; barns.

FARM ECONOMY.

Woman's Course, Fourth Year: Dairy products as human food; influences affecting character of milk; manufacture of condensed milk; the factory system and household plan of cheese-making; treatment of rennet; general process of cheese manufacture; subsequent treatment of cheese; butter-making; creameries; "deep" and "shallow" setting systems; general process of butter-making; packing and preserving butter.

DEPARTMENT OF BOTANY AND PRACTICAL HORTICULTURE.

This department embraces a course of instruction in the elements of botany, structural and systematic, with a constant attention to the practical application of botany to the farm, orchard, garden, nursery and forest; also a course of lectures on Landscape Gardening. The instruction is mainly given by lectures, accompanied by regular practical drill in all the work of the fruit, vegetable and flower gardens, nursery, orchard, vineyard and ornamental grounds.

The lectures in Practical Horticulture embrace the following and kindred subjects: The relation of atmospheric motion, moisture and temperature to horticulture; seeds, the means of collecting and preserving; propagation, by seeds, cuttings, layers, suckers, grafting, budding; care of young plants; improvement of varieties; management of commercial and farm nursery; modes of pruning; the orchard; fruit suitable for orchard and garden culture; the flower, vegetable and fruit garden; importance and mode of forest culture; shelter belts and their influence; weeds and useful plants; noting the species of trees worthy of culture, either for profit or ornament.

LANDSCAPE GARDENING.

The lectures on Landscape Gardening not only unfold the accepted principles of the art, but at the same time give special attention to such applications of the art as may be made universally available in laying out and improvement of farms and the homes of the people. These lectures are accompanied by a practical drill in in the work of laying out and plotting grounds topographically.

CHEMICAL DEPARTMENT.

PHYSICS.

This includes a full consideration of the laws of mechanics, of liquids, gases and vapors, weights and measures, and specific gravity, followed by experimental study in the Physical Laboratory of the laws of heat, light, with spectrum analysis, electricity and magnetism, and the relation of these forces to plant and animal life. Text-book, Ganot.

INORGANIC CHEMISTRY.

This course is opened with a careful study of chemical forces and the laws governing chemical combination. The elements, with their compounds, are next considered in succession as to their history, properties, manufacture, and especially with regard to their uses on the farm and in the arts. These lectures are accompanied by an extended course of laboratory practice in which each student performs every experiment with his own hands. Text-book, Eliot & Storer.

ORGANIC CHEMISTRY.

This comprises a thorough study of the chemistry of the organic compounds, the composition of plants and of the various compounds derived from them. Constantly accompanied by laboratory practice.

CHEMICAL ANALYSIS.

In this course each student is furnished his stand in the Qualitative Laboratory, completely furnished with apparatus and chemicals for his own use. He here performs analyses of farm soils, plant ash, commercial manures, ores, mineral waters, commercial compounds, etc. After completing this course, he enters, if he desires, the Quantitative Laboratory, where he pursues a full course in quantitative analysis. Text-book, Kedzie's Manual.

AGRICULTURAL CHEMISTRY.

This includes a thorough consideration of the application of chemical principles to the economy of the farm; the origin and formation of soils; the classification and composition of soils; the analysis of soils and their adaptation to purposes of production; the composition and use of manures; composting; chemistry of farm operations, such as plowing, fallowing, draining, etc. Text-book, Johnson's "How Crops Feed."

METEOROLOGY.

Embracing the composition of the atmosphere; atmospheric pressure; temperature and humidity; laws of storms; rain, snow and atmospheric electricity. A full course in meteorological observations is taken under direction of the Signal Service. Text-book, Loomis' Meteorology.

MINERALOGY.

This includes the study of the laws of crystallography, with the properties, forms and uses of the principal minerals of the United States. Blowpipe analysis forms a very important part of the course, each student being required to name and identify a large series of minerals. Text-book, Dana's Mineralogy.

HOUSEHOLD CHEMISTRY.

A course of lectures on this subject is yearly delivered to a class of young ladies. The course embraces the chemistry of cooking; the composition of food; bread; tea, chocolate and coffee; butter and milk; ripening and preservation of fruits, etc.

SPECIAL COURSES

Are constantly in progress in Assaying, Pharmaceutical Chemistry and Photography.

ENGLISH LANGUAGE.

Words are simply tools used to express ideas; and, since the vast majority of our communications are made by the employment of spoken or written words, skill in using them is as profitable to the industrialist as dexterity with the needle is profitable to the seamstress. The direct aim of the course is to make the student skillful and intelligent in handling the machinery called language, just as an engineer handles a locomotive; and no drill will be omitted, or effort spared, to gain this end. Apart from the course itself, which is far more practical and complete than that usually found in literary colleges, the constant attention given this subject by all the departments, and especially the practice required in the printing classes, affords superior advantages to the student.

DRILL IN ENGLISH.

"As grammar was made after language, so ought it to be taught after language."—*Herbert Spencer.*

Drill in English embraces the following topics:

Sounds of the language; drill in producing the vocal, sub-vocal and aspirate elements with accuracy, distinctness and volume; vowels, consonants.

Letters: Form; power; rules for spelling, drill.

Words: Signification, properties, modifications, variations, relation and dependence.

Sentences: Drill in statement of ideas; description, clearness, terseness, vigor; business letters, discussion; capitalization; syllabication; punctuation; construction and analysis of sentences; elements, uses and names; criticism of compositions printed as written; proof reading; grammatical construction; superfluous words and clauses; drill in reading, speaking and penmanship.

Text-books: Webster's Academic Dictionary; Lee & Hadley's Advanced Lessons in Language.

Pupils deficient in spelling, etc., should enter the printing class, the printing-office being the work-shop of language.

STRUCTURE OF ENGLISH.

ELEMENTS OF WORDS.—The end aimed at in this study is to learn everything about words which will aid in their effective use. Among the topics included are:

Roots: What are they; their origin; their force and value as an element of language; the manner of their growth into different parts of speech.

Stems: Their derivation; their offices and properties; their relation to other parts of words.

Prefixes and Suffixes: The several sources whence derived; the relation of their force or significance to those sources; explanation of the laws and principles governing their use along with stems.

Compounds: Their value; their properties and uses; the laws governing their formation.

Synonyms: Definitions; causes of their abundance in English; the principles to be observed in choosing among them, to express a thought.

Criticism: This constitutes a prominent part of the exercises of the pupil through his whole course in the study of English. It not only diversifies and enlivens the class-room exercise, but reduces to practice the principles of the structure of the language. By this means, the student acquires not only a knowledge of English, but readiness and accuracy in speaking or writing it. The exercises in criticism embrace not only examination of selected matter, but original composition.

ELEMENTS OF SENTENCES.—The purpose in view in studying this subject is not to traverse the ground gone over in the study of grammar, but to fix in the mind of the student a clear understanding and remembrance of names, the properties and offices of the several classes of words entering into an English sentence, by showing him the reason of things; to make more simple, as well as interesting and practically useful, a study otherwise "dry and unprofitable" in many cases, by explaining the reason of the verbal forms and changes, the rules and maxims he is to remember and observe in his use of language. In the same manner he is conducted through a study of the mutual relations and dependencies of the several elements making up a sentence.

MATHEMATICAL DEPARTMENT.

Figures and lines, like words, are only instruments with which to convey ideas, or perform operations that cannot be easily done without them. The arithmetical principles used in business are few and simple; but accuracy and rapidity in computation are only gained by practice. College graduates often fail to retain clerkships, not because they do not know *why* given operations are performed, but because they can neither add, multiply or divide with that habitual correctness which renders their work reliable.

DRILL IN ARITHMETIC.

The chief design of this study is to make the student expert in the use of numbers, as employed by the industrialist for profit. The occupation of a successful farmer demands the application of every principle of practical arithmetic, and is taken as a starting point, rather than that of an abstract system. Beginning with a simple cash account, book-keeping is gradually developed to the full extent of its real utility. The areas of fields, expense of crops, construction of houses, sales of produce, and investment of capital, involve all the fundamental operations, and those of profit and loss, commission, taxes, insurance, exchange and stocks. Following this line, the student, so far from hammering away at "pure" science draws from the mathematical store-house what he needs, and sees why he needs it. Accuracy of calculation and posting, rather than a *mere* comprehension of the principles, is aimed at. Besides the recitation-room drill in business forms, practice in the field is also given. Estimating the number of cords in a pile of wood said to be 100x4x4 feet is one thing; measuring a pile of wood through which any number of cats may be harmlessly thrown, and in which four-feet sticks are the exception, is quite another and more difficult thing.

ARITHMETIC AND BOOK-KEEPING

Is a continuation of the above, having the same purpose and adopting such methods as the necessities of the class indicate. Thorough instruction in the principles and forms of business law is given. It will be seen that this method of teaching book-keeping, besides ensuring arithmetical practice, develops practical skill in that important art.

ALGEBRA.

Algebra is included in the course as a preparation for the study of Surveying.

DRAWING.

The practical value of Industrial Drawing can hardly be overestimated, first, because its study is the best drill for the development of the perceptive faculties, which are the ones most employed in daily life; and, second, because the working classes make a far greater use of lines than they do of figures. A farmer follows a line when laying a straight furrow; the carpenter uses the square and rule twenty times as often as he does figures; and a woman in cutting a pattern, or deciding that one bonnet is prettier than another, does so by the line or "form." So that either in its direct application, or in the exercise of that taste which comes from skill in using lines, this branch of mathematics is quite as important as a means of "mental discipline" as is the branch of computation, and is of far greater daily use. The admiral system of Prof. Walter Smith, Art Director of Massachusetts, is thoroughly followed through the grades of Free-hand, Geometrical, Object, Model, Perspective, Mechanical and Topographical Drawing, during the terms indicated by the Course of Study. In addition, constant practice in the application of lines to metal and wood is furnished in the Blacksmith, Carpenter, Turning, Scroll-sawing, Carving, Engraving and Printing shops, and to fabrics in the Sewing Department.

PRACTICAL GEOMETRY.

Not one farmer in a thousand ever uses the transit in surveying his land, the testimony of the county surveyor being decisive in court; but every farmer makes countless applications of lines and angles in laying off fields, roads, gardens, planning houses, determining levels, etc. The object of Practical Geometry is to teach the properties and uses of angles, and to make the student skillful in the application of lines to the field by the use of such simple instruments as are always within reach, or within his ability to construct; and accurate in the transferring of plans to the grounds, board or block.

PRACTICAL SURVEYING.

The drill in the use of figures and lines given by the mathematical course as above indicated, renders the mastery of surveying an easy task. There is no calculation made or formula used by the working engineer which cannot be readily understood and performed by a skillful arithmetician after proper instruction. The hand-book of the engineer is accordingly supplemented with such special guidance as is found necessary for a full comprehension of the mathematical principles and their applications; and extended field practice is required in the use of the compass, level, transit and theodlite.

STUDIES SPECIAL TO WOMAN.

Besides the studies already indicated, attention is called to the following:

SPECIAL HYGIENE.

As shown in the course, one term is devoted to the study of Physiology, from the text-book of Dr. J. C. Dalton. This is followed in the fourth year by a course of lectures to young ladies by Mrs. Cripps on the subject of Hygiene, embracing such instruction in hygienic matters as are valuable to woman.

FARM ECONOMY considers those affairs of the farm which usually come under the supervision of the farmer's wife or daughter, and which are not included in "gardening" or "household economy;" such as butter and cheese-making, dairy management, etc. A course of lectures is delivered by the Professor of Practical Agriculture. See heading, "Farm Economy."

GARDENING is included in Practical Horticulture. See heading, "Landscape Gardening."

HOUSEHOLD CHEMISTRY. See heading, "Household Chemistry."

HOUSEHOLD ECONOMY

Follows Household Chemistry and consists of lectures by Mrs. Cripps in the art of house-keeping, embracing cookery, domestic management, and kindred topics. Many elderly gentlemen sufficiently know, and more young gentlemen will duly discover, that systematic knowledge of how cooking ought to be done is luminously different from the ability to do it. Instruction without practice can effect but little. Accordingly a kitchen laboratory has been completely furnished, and affords every facility for drill in the art of cooking. This drill chiefly differs from that of a kitchen in the respect that after a girl has learned to wash dishes or pare pototoes she is not kept everlastingly at either. After full trial we have found it just as feasible to give this practice, with profit and pleasure to the pupil, as it is to give laboratory practice in chemistry—and no more expensive.

VOL. IV. MANHATTAN, KANSAS, SATURDAY, DECEMBER 7, 1878. No. 34.

THE INDUSTRIALIST.

Published every Saturday by the
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Address A. A. STEWART, Manhattan, Kas.

INDUSTRIAL EDUCATION.

Not the least of the things of which Kansas has a right to be proud is its magnificent educational system. At the start a wise and vigorous policy was adopted for the education of its youth; and ever since, whether in war or peace, poverty or plenty, the State has steadily developed and carefully fostered its various educational agencies. In addition to its munificent endowment of the public schools, it has provided higher institutions for three distinct kinds of instruction, namely, normal schools for the special training of public school teachers; a university for the education of those proposing to enter the professions of law, medicine or theology; and an agricultural college for the practical education of those who will engage in any of the "industrial professions or pursuits," as distinguished from the "learned professions." The relative demand for the three forms of education is indicated by the proportion in which the citizens of Kansas follow these vocations, as shown by the last United States census. Of every one hundred persons engaged in a vocation by which money is gained, the ratios were as follows:

Normal education:		
Teachers	1.13	= 1.13
Professional education:		
Ministers	0.43	
Lawyers	0.55	
Doctors	0.73	= 1.71
Industrial education:		
In agriculture	59.13	
In manufacturing and mechanical	14.63	
In personal service	13.89	
In trade and transportation	9.51	= 97.16
		100.00

AGRICULTURAL COLLEGE.

Recognizing the need for an education which should especially prepare the rising generations for an intelligent and successful practice of those vocations which are followed by ninety-seven out of each hundred of its citizens, the first institution endowed and put in operation by the State was its Agricultural College, so named because of the fact that agriculture is, both numerically and actually, the chief of these vocations. The title, "Agricultural" College, is apt to mislead those who are not familiar with the above fact, and also with the further fact that the acts of both Congress and of Kansas provide for an "industrial," as distinguished from a "professional" education.

ENDOWMENT.

The endowment received from the United States Government consisted of 81,601 acres of choice land, all of which had been sold at date of last report, except 31,461 acres now on the market. The proceeds from the sale of lands are invested in school bonds, and the securities in hand amounted to $238,101.28 by last report. The annual income from this endowment is about $20,000, out of which all expenses of instruction are paid. The only aid received from the State is for the erection of buildings, in accordance with the conditions of the congressional grant. This is the only one of the State's institutions which is not dependent upon the tax-payer for its maintenance.

LOCATION.

It is situated one mile from Manhattan, Riley county, one hundred and twenty miles west of the Missouri River, in the heart of the finest agricultural State in America. The Kansas Pacific Railway, with its connecting lines, gives speedy communication with every quarter.

COURSE OF STUDY.

The course of study is shaped with direct reference to giving an industrial as distinct from a professional education. It makes the pupil intelligent and expert in the use of the English language; in the use of numbers as employed by the farmer, book-keeper and engineer; and in the use of lines as employed by the carpenter, painter and architect. Words, figures and lines are tools which all men use. It then gives thorough instruction and laboratorial or field drill in the following sciences as essentially useful to an intelligent and successful farmer: Physiology, Practical Agriculture, Natural Philosophy, Botany, Entomology, Practical Horticulture, Landscape Gardening, Inorganic Chemistry, Organic and Analytical Chemistry, Surveying, Geology, Mineralogy, Zoology, Meteorology, Agricultural Chemistry, Political Economy, Practical Law and Logic. It has an equally practical and effective course for the education of woman as a woman, instead of as a man, and as a worker instead of as a butterfly. Then, it has a well-stocked farm and nursery, and well-equipped shops, for giving boys practice in farm and nursery work, and in wood and iron work, and for giving girls drill in dress-making, printing, telegraphy, carving, engraving and music.

Suggestions to Persons Coming to Kansas.

There are many who believe that the stream of immigration that has been pouring westward in such immense volumes during the past two or three years, has well-nigh exhausted itself, and that Kansas cannot reasonably hope for very large accessions to her population, by immigration, in the immediate future. But this is a mistaken idea; all the signs of the times indicate that the wonderful immigration to Kansas during the year that is now drawing to a close, has been but the forerunner of a vastly greater number soon to follow. "Hard times" is still the cry, all over the East; production is in excess of consumption; there is a surplus of the products of mechanical skill, and there are more laborers than labor—the supply of workmen is far in excess of the work to be done, and, as a consequence, many thousands of men are out of employment, and with no immediate prospect of of any better state of affairs. Notwithstanding the unprecedented abundance of everything that is commonly reckoned among the necessaries of life, many of the best informed writers in the Eastern States tell us that it is useless to try to disguise the fact that the winter now approaching will certainly be the hardest, upon the laboring classes, of any winter experienced by the present generation. And sad as may be the contemplation of such a condition of affairs, all the indications surely point in that direction; unwelcome as these hard facts may be, they are nevertheless staring us in the face. With wages down to the lowest living point, with many large establishments running on "half time," with many others suspended entirely, the outlook for the operative, and the man who depends upon his wages for the support of himself and his family is certainly gloomy enough. Therefore, when the spring comes, there will be a large exodus to other quarters, and as the West holds out the greatest inducements, the attention of the emigrant is turned in this direction. He comes to the West in the hope of bettering his condition; he knows that prices of all agricultural products are very low, but he knows that the fruitfulness of the soil is without parallel, and he reasons that the low price per bushel will be offset by the number of the bushels. He knows that the change cannot be for the worse and he hopes it may be for the better; he thinks he has a reasonable prospect, at least, of making a living on the prairie, while he knows he cannot do so in his present location. He doesn't know that he will be able to live here, but he does know that he is *not* able to live there, and hence he turns to the West as a forlorn hope.

Thousands who went to Kansas—driven, we may say—by just such fortune as this, now find themselves in comfortable circumstances, independent of employers, with good homes, good surroundings, and slowly but surely growing rich. Those who come next year, and the year after, will fare equally as well, if only they are prudent, and exercise the same good judgment in the selection of a location that they would use in the selection of a horse, or a new coat. Millions of acres of good land—just as good as any in the United States—can be had by the home-seeker on terms so easy that any man who is able to move to the West and "make a claim," can obtain it. In the far western part of Kansas, there is still a large quantity of government land which can be "homesteaded"—which the Government will give, free, in 160-acre lots, to all those who are willing to settle on it and remain five years; and in all other parts of the State there are great quantities that can be bought from individual owners at very low prices, or of any one of the land-grant railroads, on terms so favorable that the purchaser can pay for it out of the products of the soil without embarrassing himself. But one of the great mistakes, in fact *the* great mistake, into which a large proportion of immigrants fall, is in going too far,—in pushing away out to the extreme frontier, where they are without schools, churches, or society, and so far away from market that the products of their land are consumed in freight charges. It is true that so much of the public land of the State has already been taken up, that in order to find land subject to "homestead entry," the settler must necessarily go into the extreme western counties, but it is far better for him to stop nearer market, even if he has to pay a good price for his land. We have written of this fact time and again, for the benefit of those who are coming to Kansas, and we should like to see it repeated by the newspapers, all over the country. When a home-seeker goes so far away from market that everything he raises is eaten up by freights, the land, while he gets it for nothing, is dearer in the end than the highest-priced land in a good location.

Good land, in any of the organized counties of the State where the settler may at once enjoy the benefit of schools, churches, society, and the advantages of civilization, may be had at very low prices, ranging from three to six dollars per acre; and when a man buys it he buys at the same time all those advantages which, on the frontier, he can only acquire by years of hard and patient toil, and by the investment of, probably, more money than would equal the entire value of his land. And more than all this is to be regarded the advantage of a good market; for of what benefit to a man, beyond his own bread, is the crop he raises, if he cannot sell it?

The amount of money that a man saves by going to a point remote from market, in order to get land for nothing, may be lost to him in the freight on one year's wheat crop. Let us illustrate:

A quarter section of land within a few hours' ride of Leavenworth, Atchison or Topeka, can be bought for five dollars an acre, or eight hundred dollars; and we will suppose that our immigrant buys his land here and puts it into wheat. His friend, who came from the same country in Pennsylvania or Ohio, prefers to go two hundred and fifty or three hundred miles further West, where he can "make a claim," get his land for nothing, and thus save his eight hundred dollars. He, too, sows his quarter section in wheat. The chances are that the man who settles on the five-dollar land will raise considerably more wheat to the acre than the other; but supposing the yield to be the same on both farms, and taking twenty bushels to the acre as a moderate estimate, we find our two settlers, after harvest, with three thousand and two hundred bushels apiece on hand. They both want to sell; the man who is convenient to market would be able to dispose of his crop, this year, at 75 cents a bushel, giving him two thousand and four hundred dollars, while his friend on the frontier will do remarkably well if he can turn his into cash at fifty cents a bushel, which would bring him sixteen hundred dollars, or eight hundred dollars less for the one crop than the other man realized,—just the amount that his friend paid for his land. And he will find the same odds against him for many years to come—for as many years, at least, as he can reasonably hope to live.

In this supposed case, we have exaggerated nothing except, perhaps, the number of acres sown, but that does not affect the point we are endeavoring to illustrate, for the comparison is the same; whether the land embraces a hundred and sixty acres, or fifty acres, or ten acres, the difference will always be from twenty-five to forty per cent in favor of the man who is adjacent to market.

Land has to be paid for only once, but freight has to be paid every time there is a crop to send to market; and we sincerely wish that every man who moves to the West could have this important fact continually before him.—*Western Homestead.*

Where Our Exports Go.

The immense increase of American exports within the last three years, changing the balance of trade from $116,000,000 against us to $271,000,000 in our favor, has been widely published and commented upon, and people are asking, Of what do these exports consist? It would require a reproduction of the entire report of the Bureau of Statistics to answer this question in detail, but a general glance at the articles of commerce will satisfy the curiosity of all but the statisticians.

In the first place, within the last two or three years, since the troubles in Europe commenced, the exports of fire-arms and ammunition have been enormous. Turkey alone purchased $27,000,000 worth of guns and cartridges. Large amounts were sold to Russia also, and other European nations purchased in smaller quantities.

American petroleum is sent to every civilized nation.

American car wheels, cars and locomotives are found on almost every railroad in the world.

American hardware goes to Denmark, Germany, France, Great Britian, Spain, Italy, Africa and Australia, the West Indies, Brazil and the Pacific Islands. Our nails are used in every civilized country, and have the largest shipments of any single article of manufactured iron.

Glassware is sent from the United States to all the countries named above in large quantities, and the shipments are rapidly increasing.

American cutlery is being sold in competition with the famous English and French manufactures, and holds its own,

Pumps are sent from the United States to South America, the Pacific Islands and the West Indies.

Coal goes to the British possessions, the West Indies, and the Sandwich Islands.

American paint is used in South America, the islands of the Atlantic and Pacific Oceans, Mexico; and a market is being opened for it in Europe.

Our clock and watch-makers are stealing the markets that have heretofore sold only Swiss and English goods, and have become known everywhere in the world.

But the latest shipments are of agricultural implements, sewing machines, scales, plated ware and saws. From the port of New York alone, more than $1,000,000 worth of sewing machines were shipped last year; and during the first six months of this year, $806,741 worth of them were shipped. During the first six months of this year there were shipped from New York $961,027 worth of reapers, $137,109 worth of plated ware, and $120,000 worth of scales. The increase in the shipment of plated ware, in two years has been 143 per cent; of reapers, 50 per cent; and of scales, 57 per cent. The increase in the export of other articles has been in the same proportion. The shipments of beef, cheese, butter, preserved meats, hops and cotton goods have all increased over fifty per cent within two years; and boots and shoes, leather goods, iron implements and other articles of American manufacture have increased in just the same ratio.—*Cleveland Leader.*

THE corn crop of 1873 was 932,274,000; that of 1878, 1,342,558,000.

THE INDUSTRIALIST.

SATURDAY, DECEMBER 7, 1878.

JNO. A. ANDERSON, Managing Editor.

ASSOCIATE EDITORS, MEMBERS OF THE FACULTY.

The State as an Insurance Company.

The destruction of the Emporia Normal School Building by fire raises a question worthy of consideration by members of the incoming Legislature. Heretofore the policy followed by the State has been that of "doing its own insuring." The Ways and Means Committees, when asked for appropriations for the insurance of buildings by the several institutions, have taken the ground that it was cheaper for the State to replace a building destroyed by fire than to pay insurance companies for carrying the risk. The result is that no building of any of the State institutions is insured, and the fact is that every building is as liable to be destroyed by fire as if it were not owned by the State.

In the case of the Emporia building, there is no doubt that it would have been more economical for the State to have paid the premiums than to lose the original investment, even leaving out of the count the matter of rebuilding. Nor is it fair to allege that the loss in that case is no greater than the amount necessary to insure all of the State's buildings, because such a calculation overlooks the fact that all of its buildings are always liable to risk. And while it is true, we believe, that this is the only building which the State has lost in the last ten years, yet no one can say that there will not be other losses in the next ten years. The Capitol building at Topeka has been in danger more than once; probably the University has; and we know that a defective flue might endanger one of our buildings in spite of the vigilance of the Janitor. At the Penitentiary and Asylums there is an element of protection arising from the number of persons present, which does not exist in buildings that are only used a part of the day. And even if the policy heretofore adopted be wise with respect to the former class of buildings, it may not be equally wise with respect to the latter class. Be this as it may, the whole question is one worthy of careful consideration.

A logical inference from the position at present held by the State is that, in acting as its own insurance company, and in failing to insure the Emporia building in other companies, it is under the same obligation to replace the loss that would be recognized by any other insurance company. For, in this view of the case, when previous Legislatures have denied an appropriation for insurance on the avowed ground that the State was in the insurance business to the extent of carrying the risks on its own buildings, they recognized the consequent obligation, in equity at least, to make good the loss. And if this proposition be correct, there may not, after all, be so great a saving to the State in the matter of insurance as is sometimes supposed.

Stock Breeding.

A practical treatise on the application of the laws of development and heredity to the improvement and breeding of domestic animals. By Manly Miles, M. D., late Professor of Agriculture in the Michigan State Agricultural College. D. Appleton & Co., New York.

This work we fancy will be welcomed by a large class of readers, and by none more warmly than by the teachers and students of our agricultural colleges. Against the general system of class lectures we have nothing to say. To advanced students, and with subjects capable of immediate illustration, as in the laboratory or dissecting room, it is without doubt the best means of imparting and demonstrating a given subject. But with the class of young men who make up the bulk of the students of our agricultural colleges, and with a subject like stock breeding, not demonstrable like chemistry, but an art "whose rules have been almost wholly empirical in origin," the case is different. With this class of students stock breeding is or ought to be a fundamental part of a general agricultural education, just as grammer and algebra are integral parts of the literary and scientific courses.

There are practical objections to teaching this class of students by lectures, of which as student and teacher we speak with a good deal of assurance. As a rule they have but an imperfect use of their minds and pencils, and in the struggle to get on paper the words of the lecturer, ideas are hopelessly jumbled, and the "cold" notes defy interpretation. If the student attempts to condense the lecturer's language, he finds in too many cases that he has only succeeded in condensing the ideas of the lecturer. These are the student's difficulties with the lecture system, but they are equally the teacher's troubles, and if he attempts to remedy them by an extended "quiz" the following day, the lesson must be shortened by just so much, and in correcting errors valuable time is used which ought to be devoted to the general subject. It need hardly be said that a good text-book does away with all of these difficulties. Such a book in the hands of a competent teacher has all the advantages of the lectures and much more.

For these reasons, any systematic treatise in stock breeding ought to be welcome to an agricultural college; but the work before us seems to us to possess special advantages as a text-book. There is no man in the United States better qualified for a work of this kind than Dr. Miles. He was the first teacher of agriculture in the oldest agricultural college in the United States, and for many years he has devoted great learning and ability to this and kindred subjects.

The work is logical in its arrangement and comprehensive in its treatment of the different topics. The great care displayed by the author in quoting only original authorities, and the numerous references to these in the form of foot-notes, give great value to the book for purposes of reference.

Some idea of the general scope of the work may be obtained from the following partial list of subjects: Breeding as an art, heredity of diseases, atavism, in-and-in breeding, cross breeding, relative influence of parents, sex, pedigree, form of animals as an index of qualities, etc.

We have been particularly interested in the chapters on the relative influence of parents and in-and-in breeding. In regard to the former, the conclusion is reached that "when the characteristics of one parent have been fixed by the inheritance of the same peculiarities for many generations, it will undoubtedly prove to be prepotent in the transmission of its characters if the other parent has a less stable organization."

After copious statements of the practices of the early breeders of the improved breeds, and after giving many quotations from the statistics of asylums to show that insanity, etc., are not the necessary result of consanguinity, the subject of in-and-in breeding is thus summed up: "The facts that have thus far been collected in regard to this subject seem to warrant the conclusion that close breeding in itself is not injurious." And again: "It must, however, be admitted that it (close breeding) is an important means of improvement when judiciously practiced, and that it constitutes the only known method of securing an accumulation of the slight variations, in a particular direction, that it may be desirable to retain and perpetuate.

To the students of physiology and stock breeding, and to breeders everywhere, we heartily recommend this book as thoroughly reliable both in its facts and conclusions.—*Prof. Shelton.*

Wheat and its Culture.

As your State is noted for fine wheat and a large yield, and subject, as well as other sections, to the ravages of the fly, rust, smut, etc., it may not be out of place to state a few facts for the consideration of your farmers. Your correspondent has for eight years made wheat his special study, and so far success has attended every step in the way of improvement.

The first step toward successful culture is the selection and sowing the seed. Seed for special cultivation and special manures should be picked while standing in the field. The *center head* of the largest tillers, that ripen earliest, should be invariably picked and shelled out by hand. This insures genuine seed, free from filth of all kinds and foreign seeds. It also improves the quality and increases the quantity. By selecting those heads that ripen first, the crop comes earlier and matures more evenly. As wheats never mix — like corn — in the field, great improvement can be made by hybridization. This is easily but not successfully done by amateurs. The fly can be prevented by early burning and clean culture. The rust, by an application—as a top-dressing, in February — of salt and ashes, can be in a great measure kept off.

Too much seed (1¼ bushels) is generally sown. It is too thick. The plant interferes, and there is not room for it to carry out the natural laws that govern it. From one peck to the acre, drilled sixteen inches apart, I have raised sixty-seven bushels against forty-two sown eight inches apart and half bushel per acre. The cultivation of the crop in the spring is of great importance and benefit. Two good harrowings and a rolling are of great advantage. ***

Read, Study and Reflect.

It is unfortunate that our system of education, the common school system, has not been of a character to develop a desire in the minds of the young to know more of the principles which underlie the occupation of the farmer. There is no doubt whatever that the farmer who is thoroughly posted, or well read in his profession, will make farming more of a success than the one who is not. A little close observation will serve to convince any one, if he will but look over his own neighborhood, that the farmer who is the most successful, as a rule, is the one who does the most reading, and who takes the greatest number of agricultural papers.

The kind of information needed on the farm cannot be acquired by talking partisan politics at the railroad stations or country stores, but by reading and conversing with other successful farmers and getting the advantage of their experience.

Too few farmers appreciate the power of the grange or its capacity for the accomplishment of good, not only from an educational point of view, but in regard to other things as well. There is need on the farm of using the mind as well as the hand. The grange is the place to meet together, talk together, and work together. Acting alone, the farmer is an easy prey to the other interests that have combined in order to work together effectually. These fix the price of what they purchase or sell, and the farmer, acting isolated and alone, must submit. The grange has proved to be the only way out of this difficulty. The first step towards making combination effective was to employ State agents. These agents or supervisors, acting upon the principle of division and concentration of labor, think, study, read, observe, experience, not for one farmer only, but for all who are joined by the association. This is a systematic method of progress, and one in which there is the most economy. Let us then stand by the grange. Let us read more, study more, reflect more, co-operate still more together; for co-operation means the social, moral, intellectual and pecuniary elevation of the people.—*Grange Bulletin.*

A YOUNG man recently left Paris to visit his family at Lyons, and as soon as he had got into the car he lit a match by scratching it with his thumb-nail, and a piece of the incandescent phosphorus penetrated under the nail and made a slight burn, to which he paid no attention. But after an hour the pain became very great, the thumb swelled, then the hand, and next the fore-arm. He was obliged to alight at the first station and send for a medical man, who declared that instant amputation of the arm was necessary. The patient insisted on postponing the operation for a few hours until the arrival of his father, for whom he had telegraphed. But before the latter came it was too late; the poisonous matter had gained the arm, then the shoulder, and any operation was henceforth impossible. The young man died twenty-seven hours after the burn, in horrible suffering.—*Boston Journal of Chemistry.*

THE INDUSTRIALIST.

SATURDAY, DECEMBER 7, 1878.

President Anderson lectured in Manhattan Thursday evening and in Oskaloosa last night.

On account of the storm last Saturday night, the Webster Society did not meet. Hence, no report.

The following students have been enrolled since our last report: *Dickinson County*—B. B. Smith; *Johnson*—John St. John; *Riley*—Jno. W. Lewis.

The class in Geology, consisting of sixteen industrious and enthusiastic students, are to visit the bluffs along the Wild Cat to-day, to study the geological formations as there shown in miniature.

At the last monthly examination, forty-nine students were in the first rank, having made an average grade of 95 or over; fifty were in the second rank, grading between 90 and 95; and the remainder stood in the third rank.

The societies of the College are making arrangements to hold a social at the close of the term, and are preparing some literary exercises to be offered at the same time. The students have done excellent work during the term, and will undoubtedly enjoy their social and the vacation to the full.

The Farm Department has lately shipped to Hon. B. L. Kingsbury, Burlington, Kansas, a ten-months-old Shorthorn bull, and a good one. Of his purchase, the Judge writes: "Regent is a splendid specimen of a Shorthorn. The best animal with the best pedigree ever in this county." Quite right, Judge.

The article on our second page, headed "Wheat and its Culture," is furnished by a friend in Tennessee who has been reading the INDUSTRIALIST, and, like many people in the South and East, is watching the rapid development of our State with great interest. The article is very acceptable, and we shall be glad to hear from our friend again.

Manhattan merchants have always been noted for their enterprise. They deal in everything connected with their respective lines of business, and which will assist them in disposing of their goods. The latest instances are Knostman's ink-stand collar boxes and Pillsbury's "first-class, warranted boots and shoes to read,"—as the last *Nationalist* has it.

Rev. J. Clark Cline, Traveling Editor of the *Central Baptist*, St. Louis, and President of the Bible Publication and Sunday School Board of the State, made us a very pleasant call yesterday morning. Mr. Cline seemed to take a great interest in the work of the College, and said that he had some boys whom he expected to send here before long. By arrangement of the Kansas Pacific Railway, Mason Long, the great temperance lecturer, is travelling with Mr. Cline.

Mason Long, the reformed gambler, who lectured in Manhattan a few weeks ago, is advertised to speak again, in the Christian Church, this evening. Mr. Long is a very pleasant speaker, and a power for good in the temperance cause wherever he goes. He is not a dashing, eloquent temperance orator; but the simple, unaffected story which he tells has its effect upon his audiences, and is well calculated to work a change in men's lives.

We have for a number of years used a simple remedy for bloat or hoven in cattle, which we know would be worth many thousands annually to the farmers of Kansas if it was generally known and practiced. Take a smooth stick about two inches in diameter and say one foot long. Fasten this in the animal's mouth by a rope at each end of the stick passed over the horns, and see that the stick is crowded well back into the mouth. We have had occasion to try this remedy many times, and have never yet known of its failure to effect a cure of simple hoven within fifteen minutes of the time of its application.

Last Wednesday evening Gov. George A. Crawford delivered a fascinating lecture before the Manhattan Grange on "Kansas and the Centennial." He outlined the difficulties overcome by the Centennial Commissioners; the work of the Kansas Board; the growth in public favor of the Kansas exhibit at the Centennial; the reflex effect upon the State; and its practical teaching respecting future action. The lecture is one of the finest of the kind we have heard. It is a brilliant poem, flashing with fun and eloquence, and ought to be delivered in every town in Kansas. At its close the audience passed a hearty vote of thanks to Gov. Crawford.

Kansas is destined to become the greatest agricultural State of the Union. Already she occupies an enviable position in the list of corn and wheat-producing States; and the immense immigration which has been steadily pouring in all the year will assist in the production of still larger crops of these cereals next year. Our people do not realize how many eyes are turned towards Kansas. Throughout the land there are men from every vocation in life watching the progress of the State in all the different industries in which her people are engaged. We ought to realize and rejoice in these facts, and bend every energy to make our glorious young commonwealth the pride of the nation.

Hon. George A. Crawford, of Fort Scott, paid his respects to the College on Thursday morning last, and, after the regular chapel exercises were concluded, made the students a very neat little speech. He related incidents in student life, spoke of the resources of the State—its need for men and women with just such qualifications as we are giving to our students, and referred to the grand educational advantages which the young men and women of to-day enjoy. He spoke, he said, for their encouragement, not for their instruction; and we are confident that every student began the work of the day with new zeal and an increased determination because of the Governor's noble and kind words. Manhattan and the College are always pleased to receive visits from him.

NATIONALIST ITEMS.

Al Wisner returned home Tuesday, and is now satisfied to live in Manhattan.

Our street-lamps have arrived and been placed in position. This is an improvement we have long needed.

The Manhattan Guards received their guns last week, and it now takes all their extra time to shoulder arms and present bayonets.

The annual meeting of the Manhattan Horticultural Society will meet on Saturday, Dec. 14th, at two o'clock P. M., at Judge Harper's office, in Manhattan.

The ladies of the Congregational Church will have an oyster supper next Thursday night, Dec. 12th, at W. P. Higinbotham's building, formerly occupied by W. H. Bower.

Thanksgiving was a quiet but happy day to most of our people. With the general good health, the good business outlook, and the perfect weather, who could be blue if they tried?

The Sons of Temperance had a public meeting at the Christian Church Tuesday evening. The church was well filled. Speaking, music, reading, and a general good time was had.

A College student, C. M. Hulett, who went home last week on account of the illness of his mother, has met with the great loss of her death. She was a christian woman, and for her to die was gain.

ENTERPRISE ITEMS.

Chas. Hoyt and family were up from Lawrence on Thanksgiving.

Blood & Brooks have a couple of handsome signs, painted by Hanson.

The Manhattan nimrods have on the war paint, and game of all kinds is abundant in the market. One hunter brought in thirty squirrels, as the result of a day's sport.

Joel House returned from his trip to Kentucky last Thursday. He says things are running along in the same old rut there, and that there are hundreds of Kentuckians coming to Kansas.

Mr. Joseph Davis arrived in Oakland, Cal., Nov. 22nd, and thus far expresses great satisfaction with the country. He was expecting to leave for the southern part of the State on the 30th ult.

Mr. Hays, superintendent of blacksmithing at the College, was badly hurt Monday morning, by his horse falling with him, while on his way to the College. He was carried home, and we have not since learned his condition.

Last Tuesday evening, about half past five o'clock, five thousand young salmon were put into the Big Blue River at Manhattan. We look forward to the supply of our tables with this palatable fish as one of the good things of the future for the residents of the Big Blue Valley.

Three years ago there was scarcely any coal used in Manhattan. Now we have two active coal dealers, and they report an immense quantity of coal consumed. Some of our people are even beginning to use Pennsylvania hard coal. One of our leading citizens, who has figured and experimented upon the matter, says that soft coal is cheaper than good wood at $3.00 per cord. As good wood cut and split costs about $5.50 per cord, it is very easy to see why so much coal is consumed.

Mark Tyler having invited his many friends of Manhattan to call upon and stay a while with him in his new home in Chicago, we understand that Sam Ferguson proposes getting up an excursion to that place during the holidays. A car will be chartered and tickets will be $10 for the round trip. Only fifty tickets will be sold. The excursion will be gone ten days from the time of leaving this place, and, while in Chicago, will stop with Mr. Tyler and his excellent wife. The appearance of this party will be quite a surprise to Mark.

The Manhattan INDUSTRIALIST comes regularly every week, containing nine columns of advertisements of the Agricultural College, much excellent clipped matter, locals, and articles by the professors. As a sample of the typography of the students, it is a credit to them.—*Kansas Collegiate.*

George H. Failyer, who some five years ago was a farmer boy of this county living in the vciinity of Timber Hills, is now the third professor in the State Agricultural College, at Manhattan. He entered the College as a student, and, by close application to study, has risen to the position of professor of chemistry, a position which commands at present a salary of one thousand dollars a year. There are now in attendance from this county something over a dozen students, Mr. Failyer being the first one who ever entered the College from this county.—*Columbus Courier.*

DIRECTIONS TO APPLICANTS.

TERMS OF ADMISSION.

Candidates for admission must be fourteen years of age, and pass a satisfactory examination in reading; arithmetic, through decimal fractions; and English grammar, to syntax. Classes are started at the beginning of each year in Drill in Arithmetic and Drill in English; and the pupil must have the knowledge above indicated, else he will be unable to retain position if admitted.

Pupils will be received at any time during the year, if able to pass an additional examination upon the subjects studied by the classes which they expect to enter. But they will find it greatly to their advantage to be present at the opening of each term, or as soon thereafter as possible.

GRADES.

Both the Literary and Industrial recitations are graded daily upon a scale of 100; and an examination of all classes is made at the close of each month. A student not attaining an average grade of sixty is promptly dropped to a lower class, or excluded from the Institution until able to do so. The work of grading is strict and uniform in all the departments, and this process is rigorously used for sifting out incompetent and indolent pupils; thus more than accomplishing all that is designed to be effected by a "high standard of admission." Hence, the student's continuance in the College wholly depends upon his own action.

The course is based upon the determination to make the labor required in the preparation of one industrial and three literary recitations as much as the average student can perfectly perform, in ten hours a day. We design to give the pupil the worth of the time expended at College; and, in order thereto, he must do a full day's work with brain or hand. Only those students who can maintain a standing of ninety in each study will be allowed to take more than the prescribed number of recitations; and no one will be permitted to have less than one industrial and three literary recitations.

RELIGIOUS.

Unless otherwise directed by parents, students are required to attend chapel at 8:30 A. M. on academic days, and divine service once every Sabbath.

EXPENSES.

There are no charges whatever for enrollment, attendance or instruction in the regular courses; nor are there any "contingent fees" for the repair of buildings, for the use of books or apparatus, for diplomas, or the kindred privileges usually grouped under the term "contingent." Male students are furnished instruction, the use of apparatus, instruments or tools, in both the literary and industrial classes marked out for them, without any charge. And the same is true of female students in the regular classes provided for them. Printing and Telegraphy are industrials primarily provided for the education of female students, and male students taking either of these are charged $1 per month for use of instruments.

Instrumental music is a fine art or "accomplishment," rather than a mechanical art. We do not place it among our "industrials" in the same sense, or for the same purpose, that we do those provided for teaching the trades. Accordingly, a fee of $12 per term, or seventy-five cents per week is required from female students for tuition and the use of pianos or organs.

The only charge made for material in either the literary or industrial departments is for the chemicals used by students in laboratory practice, which are furnished at wholesale prices, and amount to but a small sum.

Furnishing an absolutely free education is as much as can be reasonably asked; and the Institution neither boards, clothes, nor supplies the student with text-books. Boarding can be obtained in private families at from $2.75 to $4 per week. Washing costs from seventy-five cents to one dollar per dozen. Text-books, which can be procured in Manhattan, cost from $2 to $5 per term.

No student need expend over $5 per week; and many of our best pupils are living at $1.25 per week. Students desiring to "board themselves" can do so at from $1 to $2 per week. In a club of four young men, renting a house, the average cost to each for the term was $1.11 per week.

LABOR.

Manual labor by the students may be for either of two purposes: First, to acquire skill in a given art; second, to earn money. In the first case, the labor is educational; in the second, it should be paid for by the party benefited.

Educational Labor.—Manual labor in the reciations of the Industrial Departments, like mental labor in those of the Literary Departments, is purely educational and will not be remunerated. While the interest of the student will be held paramount in the direction of this labor, the practice necessary to dexterity will be required.

Remunerated Labor.—When the Institution needs labor on the Farm or elsewhere which is not educational, but simply for its own profit, and which a student is able and willing to perform, it becomes an employer instead of a teacher, and he an employe instead of a scholar. It pays for work, he works for pay. The relation between them is commercial, not educational; and both parties must act upon business principles. Hence, the College furnishes only such employment as its own interests require, and will pay according to the value of the service rendered at from seven to ten cents an hour.

AMOUNT EARNED.

It is impossible to predict how much a given person can earn, since that depends upon what he can do and what work there is to be done. Hence, it is wholly impossible for us to answer the question so often asked: "Do you think I can meet my expenses by work?" Some students make one-half their expenses, some the whole, and exceptional men have made more than expenses. As a rule, a faithful boy skilled in farm work can earn half his expenses on the Farm or in the Nursery. During the year he can ordinarily acquire sufficient skill in the wood or iron shops to enable him to make articles for sale. The whole question is one for his own consideration and decision. We can teach all who come, but cannot absolutely *promise* anything more. Hitherto we have refrained from holding out strong inducements respecting the amount of labor we might have to offer; but in view of the fact that during each of the last three years we have had more to do than the students could perform, we are inclined to give greater and positive encouragement on this point. Any boy who is in dead earnest, who is familiar with farm operations, and who can raise $50 to start with, should be able to carry himself through the four years' course. And certainly this places an education within the reach of every determined boy. As yet we are unable to offer similar advantages to girls, not requiring labor in the College departments which they can perform.

RULES.

1. Behave as a true man or woman should, at all times and in all places.
2. Attend to your own business promptly, thoroughly and courteously; and vigorously let alone that of other people.
3. Penalty: "Leave!"

PUBLICATIONS.

The "Hand-Book," published in 1874, containing a full discussion of the educational question and the aims of the Institution, will be forwarded to any one desiring it.

THE INDUSTRIALIST, a weekly journal edited by the Faculty and published by the Printing Department, contains original and seasonable articles on the Farm, Orchard, Trades, Sciences, and Education. Price, 75 cents a year. Address A. A. Stewart, Manhattan.

CALENDAR.

Fall Term 1878.—Begins Wednesday, September 4th, and closes Friday, December 20th.

TO NEW STUDENTS.

Bring the text-books you have been using. On arrival, first arrange for your boarding. A. A. Stewart, Sup't Printing Department, will furnish information, either by letter or on application, concerning boarding places or rooms for rent. Report to the President at 8:30 A. M., immediately after chapel, for enrollment.

For further information apply to Jno. A. Anderson, President, Manhattan, Kansas.

RAILROAD TIME-TABLE.

KANSAS PACIFIC RAILWAY.

PASSENGER ARRIVES.

No. 2, going East	11:14 A. M.
No. 4, going East	3:47 A. M.
No. 1, going West	5:10 P. M.
No. 3, going West	4:33 A. M.
No. 7 (freight), going West	8:15 A. M.

Nos. 1 and 2 run daily; Nos. 3 and 7 run daily except Monday; No. 4 runs daily except Sunday. Passengers with tickets are carried on No. 7.

GEO. C. WILDER, Agent.

KANSAS STATE AGRICULTURAL COLLEGE.

FACULTY.

J. A. ANDERSON, *President, Prof. Political Economy.*
M. L. WARD, *Prof. Mathematics and English.*
G. H. FAILYER, *Prof. Chemistry and Physics.*
E. M. SHELTON, *Prof. Prac. Agricul., Sup't Farm.*
H. E. VAN DEMAN, *Prof. Botany and Horticulture.*
J. E. PLATT, *Prof. Elem'y English, Mathematics.*
JNO. D. WALTERS, *Teacher Industrial Drawing.*
HON. D. J. BREWER, *Lecturer on Practical Law.*
T. T. HAWKES, *Sup't Mechanical Department.*
A. A. STEWART, *Sup't Printing Department.*
W. C. STEWART, *Sup't Telegraph Department.*
MRS. M. E. CRIPPS, *Sup't Sewing Department.*
W. L. HOFER, *Teacher of Instrumental Music.*

INDUSTRIAL EDUCATION.

The real value of an education to the student depends upon two things: First, the practical worth of the knowledge taught; and, second, the degree in which he makes it his own. Hence, the ability of any institution to give a practical education depends upon the kind and aim of the knowledge it teaches, and upon the thoroughness of the instruction therein. The State Agricultural College was directly endowed by Congress, and is guided by the State, for the specific purpose of furnishing to the industrial classes of Kansas a "practical" education, that is, "one fit for use." As its name indicates, and as the statistics of the industries of the State require, its chief work must be that of giving a useful and usable education to those who will engage in farming; and, therefore, the Farmer's Course must, from the nature of the case, be its main one.

FARMER'S EDUCATION.

Words and figures are merely instruments with which to record ideas. They are not themselves ideas, nor should they be made the chief end of an education. As a wagon is necessary to haul grain, so are they a necessary part of an education; but as the wagon is not the grain, so they are not the knowledge which the farmer converts into money. Hence, the classics and higher mathematics are not taught. But it will be noticed in the following course that so soon as the pupil acquires working skill in the use of the English language as a tool, and of figures and lines as mathematical tools, those arts and sciences which present knowledge that has a cash value to the farmer are taught as rapidly as their importance and thorough acquisition will permit. Studies numbered (1) and (4) in the second, third and fourth years are the spine of the course, to which the others are as ribs and muscle.

FARMER'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Practical Agriculture (advanced.)		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit. Economy, Practical Law.		3. Practical Geometry.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. Practical Agricul. (elementary).		4. English Structure.	
5. Agricul. Chemistry, Meteorology.		5. Organic, Analytical Chemistry.		5. Physics.		5. Adv'd Arithmetic, Book-keeping.	
6. Logic.		6. Practical Surveying.		6. Industrial Drawing.		6. U.S. History, Industrial Drawing.	

WOMAN'S EDUCATION.

Nearly one-half of our students are females, and the Woman's Course is prepared expressly for their liberal and practical education. We have no doubt whatever that practical men and women, who understand what it means and what it seeks to do, will fully endorse it.

WOMAN'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Farm Economy, Special Hygiene.		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit. Economy, Practical Law.		3. Industrial Drawing.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. English Literature.		4. English Structure.	
5. Physiol. Geography, Meteorology.		5. Organic, Household Chemistry.		5. Physics.		5. Adv'd Arith., Book-keeping.	
6. Logic.		6. Household Economy.		6. Industrial Drawing.		6. U.S. History, Industrial Drawing.	

MECHANIC'S EDUCATION.

Because of the adaptedness of the leading course to the wants of the intelligent mechanic, it has been found practically unnecessary to diverge from the Farmer's Course. Additional studies, specially adapted to the mechanic's use, will be furnished in a Post-Graduate's Course.

If it be urged that the distinctively agricultural knowledge taught in the Farmer's Course is not directly valuable to the mechanic, we reply that, admitting the point for the purpose of argument, yet: 1. This knowledge is of more practical value to the mechanic than is the Latin, Greek, or a half dozen other things embraced in the usual course preparatory to the professions; 2. That the great majority of Kansas mechanics will also be more or less engaged in agriculture; 3. That those studies in the course which are directly valuable to the mechanic, together with the shop facilities, offer a better mechanic's education than can be elsewhere found west of the Alleghanies.

INDUSTRIAL DEPARTMENTS.

Having knowledge in the head is one thing; ability to use it with the tongue, fingers or feet is quite another thing. Both are vital to success in practical life. A man might thoroughly understand the theoretical principles of carpentry, and yet, not having used the tools, be wholly unable to earn carpenter's wages. So in all other vocations. Accordingly, instruction is given in the following well-equipped Industrial Departments, and every student is required to recite in some one of them, as selected by the pupil or parent:

FOR MALE STUDENTS.	FOR FEMALE STUDENTS.
The Farm.	Dress-making.
The Nursery.	Printing.
Carpentry.	Telegraphy.
Cabinet-making.	Scroll-sawing.
Turning.	Carving.
Wagon-making.	Engraving.
Painting.	Photography.
Blacksmithing.	Instrumental Music.

Each of these departments is conducted exactly as in daily life, and aims to give precisely the drill received by an apprentice. No charge is made, either for tuition or material, from male students taking the Industrials provided for them; nor from female students taking the ones provided for them, except in the Department of Instrumental Music. Male students taking either Printing or Telegraphy are charged $1 per month for the use of material and instruments.

DEPARTMENTS OF INSTRUCTION.

DEPARTMENT OF AGRICULTURE.

PRACTICAL AGRICULTURE.

Second Year:—General principles of breeding; history and characteristics of breeds; adaptation of different breeds for special purposes and localities; implements of simple tillage; mechanical principles involved in their construction; act on of the plow upon soil and subsoil; principles of draught; influence of different adjustments upon draught; use of the dynamometer; value of hoed crops in a system of husbandry; the cultivation of corn and roots; soils that need drainage; how to lay out a system of drains; house drainage; sewerage.

Fourth Year: General view of agriculture, ancient and modern; agricultural progress of the last century; relative advantages of mixed husbandry and special farming; the selection and arrangement of the farm with reference to the system to be pursued; rotation of crops; general advantages of a rotation; the best rotation with reference to disposition of labor, production of manure, and extermination of weeds; pasturage and production of grain and forage crops; manures, how best housed and applied; composting manures; commercial fertilizers; systems of feeding; stall feeding; steaming food; soiling; experiments in feeding; farm buildings; farmhouses; barns.

FARM ECONOMY.

Woman's Course, Fourth Year: Dairy products as human food; influences affecting character of milk; manufacture of condensed milk; the factory system and household plan of cheese-making; treatment of rennet; general process of cheese manufacture; subsequent treatment of cheese; butter-making; creameries; "deep" and "shallow" setting systems; general process of butter-making; packing and preserving butter.

DEPARTMENT OF BOTANY AND PRACTICAL HORTICULTURE.

This department embraces a course of instruction in the elements of botany, structural and systematic, with a constant attention to the practical application of botany to the farm, orchard, garden, nursery and forest; also a course of lectures on Landscape Gardening. The instruction is mainly given by lectures, accompanied by regular practical drill in all the work of the fruit, vegetable and flower gardens, nursery, orchard, vineyard and ornamental grounds.

The lectures in Practical Horticulture embrace the following and kindred subjects: The relation of atmospheric motion, moisture and temperature to horticulture; seeds, the means of collecting and preserving; propagation, by seeds, cuttings, layers, suckers, grafting, budding; care of young plants; improvement of varieties; management of commercial and farm nursery; modes of pruning; the orchard; fruit suitable for orchard and garden culture; the flower, vegetable and fruit garden; importance and mode of forest culture; shelter belts and their influence; weeds and useful plants; noting the species of trees worthy of culture, either for profit or ornament.

LANDSCAPE GARDENING.

The lectures on Landscape Gardening not only unfold the accepted principles of the art, but at the same time give special attention to such applications of the art as may be made universally available in laying out and improvement of farms and the homes of the people. These lectures are accompanied by a practical drill in in the work of laying out and plotting grounds topographically.

CHEMICAL DEPARTMENT.

PHYSICS.

This includes a full consideration of the laws of mechanics, of liquids, gases and vapors, weights and measures, and specific gravity, followed by experimental study in the Physical Laboratory of the laws of heat, light, with spectrum analysis, electricity and magnetism, and the relation of these forces to plant and animal life. Text-book, Ganot.

INORGANIC CHEMISTRY.

This course is opened with a careful study of chemical forces and the laws governing chemical combination. The elements, with their compounds, are next considered in succession as to their history, properties, manufacture, and especially with regard to their uses on the farm and in the arts. These lectures are accompanied by an extended course of laboratory practice in which each student performs every experiment with his own hands. Text-book, Eliot & Storer.

ORGANIC CHEMISTRY.

This comprises a thorough study of the chemistry of the organic compounds, the composition of plants and of the various compounds derived from them. Constantly accompanied by laboratory practice.

CHEMICAL ANALYSIS.

In this course each student is furnished his stand in the Qualitative Laboratory, completely furnished with apparatus and chemicals for his own use. He here performs analyses of farm soils, plant ash, commercial manures, ores, mineral waters, commercial compounds, etc. After completing this course, he enters, if he desires, the Quantitative Laboratory, where he pursues a full course in quantitative analysis. Text-book, Kedzie's Manual.

AGRICULTURAL CHEMISTRY.

This includes a thorough consideration of the application of chemical principles to the economy of the farm; the origin and formation of soils; the classification and composition of soils; the analysis of soils and their adaptation to purposes of production; the composition and use of manures; composting; chemistry of farm operations, such as plowing, fallowing, draining, etc. Text-book, Johnson's "How Crops Feed."

METEOROLOGY.

Embracing the composition of the atmosphere; atmospheric pressure; temperature and humidity; laws of storms; rain, snow and atmospheric electricity. A full course in meteorological observations is taken under direction of the Signal Service. Text-book, Loomis' Meteorology.

MINERALOGY.

This includes the study of the laws of crystallography, with the properties, forms and uses of the principal minerals of the United States. Blowpipe analysis forms a very important part of the course, each student being required to name and identify a large series of minerals. Text-book, Dana's Mineralogy.

HOUSEHOLD CHEMISTRY.

A course of lectures on this subject is yearly delivered to a class of young ladies. The course embraces the chemistry of cooking; the composition of food; bread; tea, chocolate and coffee; butter and milk; ripening and preservation of fruits, etc.

SPECIAL COURSES

Are constantly in progress in Assaying, Pharmaceutical Chemistry and Photography.

ENGLISH LANGUAGE.

Words are simply tools used to express ideas; and, since the vast majority of our communications are made by the employment of spoken or written words, skill in using them is as profitable to the industrialist as dexterity with the needle is profitable to the seamstress. The direct aim of the course is to make the student skillful and intelligent in handling the machinery called language, just as an engineer handles a locomotive; and no drill will be omitted, or effort spared, to gain this end. Apart from the course itself, which is far more practical and complete than that usually found in literary colleges, the constant attention given this subject by all the departments, and especially the practice required in the printing classes, affords superior advantages to the student.

DRILL IN ENGLISH.

"As grammar was made after language, so ought it to be taught after language."—*Herbert Spencer.*

Drill in English embraces the following topics:

Sounds of the language; drill in producing the vocal, sub-vocal and aspirate elements with accuracy, distinctness and volume; vowels, consonants.

Letters: Form; power; rules for spelling, drill.

Words: Signification, properties, modifications, variations, relation and dependence.

Sentences: Drill in statement of ideas; description, clearness, terseness, vigor; business letters, discussion; capitalization; syllabication; punctuation; construction and analysis of sentences; elements, uses and names; criticism of compositions printed as written; proof reading; grammatical construction; superfluous words and clauses; drill in reading, speaking and penmanship.

Text-books: Webster's Academic Dictionary; Lee & Hadley's Advanced Lessons in Language.

Pupils deficient in spelling, etc., should enter the printing class, the printing-office being the work-shop of language.

STRUCTURE OF ENGLISH.

ELEMENTS OF WORDS.—The end aimed at in this study is to learn everything about words which will aid in their effective use. Among the topics included are:

Roots: What are they; their origin; their force and value as an element of language; the manner of their growth into different parts of speech.

Stems: Their derivation; their offices and properties; their relation to other parts of words.

Prefixes and Suffixes: The several sources whence derived; the relation of their force or significance to those sources; explanation of the laws and principles governing their use along with stems.

Compounds: Their value; their properties and uses; the laws governing their formation.

Synonyms: Definitions; causes of their abundance in English; the principles to be observed in choosing among them, to express a thought.

Criticism: This constitutes a prominent part of the exercises of the pupil through his whole course in the study of English. It not only diversifies and enlivens the class-room exercise, but reduces to practice the principles of the structure of the language. By this means, the student acquires not only a knowledge of English, but readiness and accuracy in speaking or writing it. The exercises in criticism embrace not only examination of selected matter, but original composition.

ELEMENTS OF SENTENCES.—The purpose in view in studying this subject is not to traverse the ground gone over in the study of grammar, but to fix in the mind of the student a clear understanding and remembrance of names, the properties and offices of the several classes of words entering into an English sentence, by showing him the reason of things; to make more simple, as well as interesting and practically useful, a study otherwise "dry and unprofitable" in many cases, by explaining the reason of the verbal forms and changes, the rules and maxims he is to remember and observe in his use of language. In the same manner he is conducted through a study of the mutual relations and dependencies of the several elements making up a sentence.

MATHEMATICAL DEPARTMENT.

Figures and lines, like words, are only instruments with which to convey ideas, or perform operations that cannot be easily done without them. The arithmetical principles used in business are few and simple; but accuracy and rapidity in computation are only gained by practice. College graduates often fail to retain clerkships, not because they do not know *why* given operations are performed, but because they can neither add, multiply or divide with that habitual correctness which renders their work reliable.

DRILL IN ARITHMETIC.

The chief design of this study is to make the student expert in the use of numbers, as employed by the industrialist for profit. The occupation of a successful farmer demands the application of every principle of practical arithmetic, and is taken as a starting point, rather than that of an abstract system. Beginning with a simple cash account, book-keeping is gradually developed to the full extent of its real utility. The areas of fields, expense of crops, construction of houses, sales of produce, and investment of capital, involve all the fundamental operations, and those of profit and loss, commission, taxes, insurance, exchange and stocks. Following this line, the student, so far from hammering away at "pure" science draws from the mathematical store-house what he needs, and sees why he needs it. Accuracy of calculation and posting, rather than a *mere* comprehension of the principles, is aimed at. Besides the recitation-room drill in business forms, practice in the field is also given. Estimating the number of cords in a pile of wood said to be 100x4x4 feet is one thing; measuring a pile of wood through which any number of cats may be harmlessly thrown, and in which four-feet sticks are the exception, is quite another and more difficult thing.

ARITHMETIC AND BOOK-KEEPING

Is a continuation of the above, having the same purpose and adopting such methods as the necessities of the class indicate. Thorough instruction in the principles and forms of business law is given. It will be seen that this method of teaching book-keeping, besides ensuring arithmetical practice, develops practical skill in that important art.

ALGEBRA.

Algebra is included in the course as a preparation for the study of Surveying.

DRAWING.

The practical value of Industrial Drawing can hardly be overestimated, first, because its study is the best drill for the development of the perceptive faculties, which are the ones most employed in daily life; and, second, because the working classes make a far greater use of lines than they do of figures. A farmer follows a line when laying a straight furrow; the carpenter uses the square and rule twenty times as often as he does figures; and a woman in cutting a pattern, or deciding that one bonnet is prettier than another, does so by the line or "form." So that either in its direct application, or in the exercise of that taste which comes from skill in using lines, this branch of mathematics is quite as important as a means of "mental discipline" as is the branch of computation, and is of far greater daily use. The admiral system of Prof. Walter Smith, Art Director of Massachusetts, is thoroughly followed through the grades of Free-hand, Geometrical, Object, Model, Perspective, Mechanical and Topographical Drawing, during the terms indicated by the Course of Study. In addition, constant practice in the application of lines to metal and wood is furnished in the Blacksmith, Carpenter, Turning, Scroll-sawing, Carving, Engraving and Printing shops, and to fabrics in the Sewing Department.

PRACTICAL GEOMETRY.

Not one farmer in a thousand ever uses the transit in surveying his land, the testimony of the county surveyor being decisive in court; but every farmer makes countless applications of lines and angles in laying off fields, roads, gardens, planning houses, determining levels, etc. The object of Practical Geometry is to teach the properties and uses of angles, and to make the student skillful in the application of lines to the field by the use of such simple instruments as are always within reach, or within his ability to construct; and accurate in the transferring of plans to the grounds, board or block.

PRACTICAL SURVEYING.

The drill in the use of figures and lines given by the mathematical course as above indicated, renders the mastery of surveying an easy task. There is no calculation made or formula used by the working engineer which cannot be readily understood and performed by a skillful arithmetician after proper instruction. The hand-book of the engineer is accordingly supplemented with such special guidance as is found necessary for a full comprehension of the mathematical principles and their applications; and extended field practice is required in the use of the compass, level, transit and theodlite.

STUDIES SPECIAL TO WOMAN.

Besides the studies already indicated, attention is called to the following:

SPECIAL HYGIENE.

As shown in the course, one term is devoted to the study of Physiology, from the text-book of Dr. J. C. Dalton. This is followed in the fourth year by a course of lectures to young ladies by Mrs. Cripps on the subject of Hygiene, embracing such instruction in hygienic matters as are valuable to woman.

FARM ECONOMY considers those affairs of the farm which usually come under the supervision of the farmer's wife or daughter, and which are not included in "gardening" or "household economy;" such as butter and cheese-making, dairy management, etc. A course of lectures is delivered by the Professor of Practical Agriculture. See heading, "Farm Economy."

GARDENING is included in Practical Horticulture. See heading, "Landscape Gardening."

HOUSEHOLD CHEMISTRY. See heading, "Household Chemistry."

HOUSEHOLD ECONOMY

Follows Household Chemistry and consists of lectures by Mrs. Cripps in the art of house-keeping, embracing cookery, domestic management, and kindred topics. Many elderly gentlemen sufficiently know, and more young gentlemen will duly discover, that systematic knowledge of how cooking ought to be done is luminously different from the ability to do it. Instruction without practice can effect but little. Accordingly a kitchen laboratory has been completely furnished, and affords every facility for drill in the art of cooking. This drill chiefly differs from that of a kitchen in the respect that after a girl has learned to wash dishes or pare pototoes she is not kept everlastingly at either. After full trial we have found it just as feasible to give this practice, with profit and pleasure to the pupil, as it is to give laboratory practice in chemistry—and no more expensive.

THE INDUSTRIALIST

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THE INDUSTRIALIST.

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Address A. A. STEWART, Manhattan, Kas.

INDUSTRIAL EDUCATION.

Not the least of the things of which Kansas has a right to be proud is its magnificent educational system. At the start a wise and vigorous policy was adopted for the education of its youth; and ever since, whether in war or peace, poverty or plenty, the State has steadily developed and carefully fostered its various educational agencies. In addition to its munificent endowment of the public schools, it has provided higher institutions for three distinct kinds of instruction, namely, normal schools for the special training of public school teachers; a university for the education of those proposing to enter the professions of law, medicine or theology; and an agricultural college for the practical education of those who will engage in any of the "industrial professions or pursuits," as distinguished from the "learned professions." The relative demand for the three forms of education is indicated by the proportion in which the citizens of Kansas follow these vocations, as shown by the last United States census. Of every one hundred persons engaged in a vocation by which money is gained, the ratios were as follows:

Normal education:		
Teachers	1.13	1.13
Professional education:		
Ministers	0.43	
Lawyers	0.55	
Doctors	0.73	1.71
Industrial education:		
In agriculture	59.13	
In manufacturing and mechanical	14.63	
In personal service	13.89	
In trade and transportation	9.51	97.16
		100.00

AGRICULTURAL COLLEGE.

Recognizing the need for an education which should especially prepare the rising generations for an intelligent and successful practice of those vocations which are followed by ninety-seven out of each hundred of its citizens, the first institution endowed and put in operation by the State was its Agricultural College, so named because of the fact that agriculture is, both numerically and actually, the chief of these vocations. The title, "Agricultural" College, is apt to mislead those who are not familiar with the above fact, and also with the further fact that the acts of both Congress and of Kansas provide for an "industrial," as distinguished from a "professional" education.

ENDOWMENT.

The endowment received from the United States Government consisted of 81,601 acres of choice land, all of which had been sold at date of last report, except 31,461 acres now on the market. The proceeds from the sale of lands are invested in school bonds, and the securities in hand amounted to $238,101.28 by last report. The annual income from this endowment is about $20,000, out of which all expenses of instruction are paid. The only aid received from the State is for the erection of buildings, in accordance with the conditions of the congressional grant. This is the only one of the State's institutions which is not dependent upon the tax-payer for its maintenance.

LOCATION.

It is situated one mile from Manhattan, Riley county, one hundred and twenty miles west of the Missouri River, in the heart of the finest agricultural State in America. The Kansas Pacific Railway, with its connecting lines, gives speedy communication with every quarter.

COURSE OF STUDY.

The course of study is shaped with direct reference to giving an industrial as distinct from a professional education. It makes the pupil intelligent and expert in the use of the English language; in the use of numbers as employed by the farmer, book-keeper and engineer; and in the use of lines as employed by the carpenter, painter and architect. Words, figures and lines are tools which all men use. It then gives thorough instruction and laboratorial or field drill in the following sciences as essentially useful to an intelligent and successful farmer: Physiology, Practical Agriculture, Natural Philosophy, Botany, Entomology, Practical Horticulture, Landscape Gardening, Inorganic Chemistry, Organic and Analytical Chemistry, Surveying, Geology, Mineralogy, Zoology, Meteorology, Agricultural Chemistry, Political Economy, Practical Law and Logic. It has an equally practical and effective course for the education of woman as a woman, instead of as a man, and as a worker instead of as a butterfly. Then, it has a well-stocked farm and nursery, and well-equipped shops, for giving boys practice in farm and nursery work, and in wood and iron work, and for giving girls drill in dressmaking, printing, telegraphy, carving, engraving and music.

Marvelous Kansas.

One of the best of the many letters which have been written about Kansas, is one which recently appeared in the Chicago *Times*, and which was reproduced in many of the great papers of the East. It was written from Salina, and shows conclusively by abundant statistics that Kansas is the Mecca of the thrifty immigrant, and that those who come here remain contented under its skies and on its soil, because they find the former rich in health and vital reinforcement, and the latter in the fertile source of material wealth. A few days ago we had occasion to publish a glowing tribute to our State which we found embodied in this letter, and now quote further from it:

Let the following figures be given due consideration: In 1875 there was grown in Kansas 13,000,000 bushels of wheat and 81,000,000 bushels of corn; in 1876, 15,000,000 bushels of wheat and 83,000,000 of corn; in 1877, 15,000,000 bushels of wheat and 103,000,000 of corn. The nearest round number is given, sometimes over, sometimes under the actual figures. The successive results as to the two more important products exhibit the *certainty* of crop production. In these same years there were large and fortunate crops of rye, barley, oats, buckwheat, Irish potatoes, sweet potatoes, sorghum, castor beans, flax, hemp, tobacco, broom-corn, millet, and Hungarian, timothy and clover. Of these minor crops, the gross value in 1877 was in excess of $13,000,000. In most of those, Kansas was among the very first in the Union. In rye she was the first. The total value of all field crops for 1877 was $45,597,051.21. This year (1878) Kansas steps to the front, the first State in the Union in the production of wheat, unless, possibly, California has to be excepted, with a yield of more than 30,000,000 bushels of wheat of superior quality and standard weight. The increase in acreage sown to wheat was one-third greater than in 1877. The corn production for the current year — the acreage being somewhat less than in 1877, but the average yield per acre greater — is not probably less than 105,000,000 bushels. In the lesser field crops, the yield has been as abundant as in the exhibit of last year. Compare these remarkable results of four successive years in Kansas with the record, through the same period, of any other State which claims agricultural excellence, and it will be seen that nowhere else have the rewards of husbandry, of general farming, proved so bountiful and sure as they have in this most fortunate and prolific State.

In the successful rearing of live stock, the ratio of increase of total value is rapidly pushing Kansas toward the head. The percentage of increase is regular and noteworthy in both horses, cattle, swine and sheep, that of hogs being most remarkable, the increase in 1877 having been 116 per cent, and for eight months of the present year 70 per cent.

The culture of fruit — that which adds so much to the completeness of rural domestic life — attains a higher degree of general success in Kansas, both as to certainty and quality of crop, than in any other of the prairie States. The proportion of fruiting trees to these, too young to produce fruit, is about 30 per cent; yet the gross market value of fruit, grapes and wine for 1877 reached the important figure of $3,000,000.

Thus a new State, not thickly settled in its more populous districts, having more than four-fifths of its organized domain open to settlers on lands which may be bought from $2.50 to $6 per acre, by the superior adaptability of its soil and climate to produce wealth, outranks in two joint great staples all its older and more populous sister States, and presents a wider range of profitable general farming than any other State. Add to this class of facts a climate and an atmosphere in which human life finds better conditions throughout the year for amplitude and freedom of healthy and ebullient vital force than can well be found elsewhere, and it is not to be doubted that Kansas is the most hopeful region which anywhere in all the broad West invites the emigrant.

* * * * * *

The immense stretch of wheat fields coursed by the Kansas Pacific — fields absorbing mature splendor from midsummer suns and waving their sheen to the wooing winds under glorious skies, and later the mellow autumn corn lands conspiring with the embrowned groves and bright sweep of meadow to enrich the broad-extending view — have given to this route the name distinctively of the "golden belt route."

They call this country the "golden belt route." It is true. Aptly is it named "golden." The rivers that, springing from the concealed places of precious metals, shed their glittering deposits as they run, course not through sands as golden as these fields. The placers and deep emboweled veins of any Eldorado towards which men have thronged, driven by the raging thirst for gold, had no such promise for the work of men's hands as these still valleys and uplands, lying under luxurious skies waiting for the reveling plow. It is in such a country where men, through the order of the years, are most free, and labor is most king.

For the fiscal year ending June 30, 1878, there was entered, as appears from the records of the general land office in Washington, of government lands in Kansas, 2,067,179 acres; in Nebraska, 620,675 acres; in Minnesota, 1,041,202 acres; in Dakota, 1,461,801 acres, the entries for Kansas being thus forty per cent of the total for the four most active land districts in the Union. This indicates the relative immigration to Kansas.

Wheat culture being the most considerable of farming operations in the more recently-settled counties of Kansas, the following figures are confined to the item of wheat: The total increase of acreage sown to spring and winter wheat in Kansas in 1878, over that of 1877, was 679,931 acres. For the counties adjacent to the Kansas Pacific main line and branches, the increase was 294,023 acres, or more than forty-three per cent of the entire increase of the State. These counties, of course, comprise but a section of the limestone belt. The data shows in what portion of the State immigration and settlement are most rapid. The figures as to population are still more forcible. The population of Kansas in 1874 was 530,367, and on March 1, 1878, was 708,497, an increase of 178,130. In 1874 the population of twenty counties on the line of the Kansas Pacific west of and including Pottawatomie county, which is one hundred miles west of the Missouri River, was 74,364. On March 1st of the present year, the population of these same counties was 125,880, an increase of 51,516, or twenty-three per cent of the entire increase for the State, an astonishing exhibit for so small a fraction of the State. The increase of these counties for 1878 is over thirty-five per cent of the whole State. The increase, in average, to winter wheat in these twenty counties in 1878, over that of the same counties in 1877, was more than fifty per cent.

In 1877 the yield of winter and spring wheat in nineteen counties west of and including Pottawatomie (Trego county being omitted from the former list), along the line of the Kansas Pacific, was 5,185,894 bushels, or more than 34 per cent of the yield for the entire State. In 1878 the yield for these same counties aggregated 12,346,128 bushels of wheat, or more than 40 per cent of the entire wheat product of the State. The average yield per acre in 1878, in the counties cited, of winter wheat was 23½ bushels; of both winter and spring wheat, 20 9-10 bushels. The average per acre of the entire State, both winter and spring, was 79½ bushels. Many special yields of winter wheat per acre in the counties above referred to are very remarkable. The following are a few instances: One field of twelve acres in Riley county averaged 35 bushels to the acre. Two fields in Saline county, of twenty and seventy acres, produced 53 and 35 bushels respectively to the acre. Of two fields in McPherson county, twelve acres each, one averaged 57½ bushels, the other 36 bushels. In Ellsworth county, a field of nine acres averaged 34 bushels to the acre. Of three fields in Ellis county, eighty, fifteen and one hundred and twenty acres respectively, the first produced 30 bushels to the acre, the two latter 32 bushels each. In Ottawa county, two fields, one of nineteen the other of ninety acres, yielded an average for the first of 61¾ bushels, for the second 40⅔ bushels. One field of four hundred acres in Lincoln county, harvested 29 bushels to the acre.—*Atchison Patriot.*

WHEN the young men of our country who are farmers feel discouraged because their early dreams of wealth and plenty have not been realized, let them stop for a moment and think of the vast numbers of poor slave farmers of Europe who have been digging and struggling for many years on their litttle three or five-acre farms and have gained nought but a scanty living for themselves and their families. They are free men and yet they are slaves; they own nothing and have ceased to hope for anything from their own country. Many of them, we are told, are striving hard to save a few dollars each year, that they may come to America, to Kansas, where some of their countrymen have already located, and are writing back of how here in the new West they have become the owners of 160-acre farms which yield them a living such as they never had before. Some of these happy freemen are perhaps to be found right in your own neighborhood, and if so you may see the light of contentment in their faces. Be satisfied with a steady growth; remember that there are thousands who would consider themselves independent were they placed where you are. Stick to the farm and you will surely come out ahead in the end.—*Spirit of Kansas.*

MISS GRACE C. BIDD has been appointed a member of the State University, at Columbia, Mo. at a salary of $2,000. Women are slowly getting to be somebody.

THE largest flour mill in the world is at Niagara Falls. Its capacity is about one thousand two hundred barrels a day. This structure is placed on the hydraulic canal, with a perpendicular fall of one hundred and ninety feet.

THERE is a growing conviction that our public schools fail to furnish what they are designed and what they ought to furnish, in that, in many cases, the teachers lose sight of the real object of their vocation, and the purpose for which they are employed; namely, TEACHING.—*Mayor of Worcester, Mass.*

THE number of persons in the United States (ten years old and over) who are unable to read or write is 4,528,084, and of persons who can read but not write (ten years old and upward), 5,658,144. In Iowa there are 24,115 persons who are unable to either read or write, and 43,671 persons who cannot write. These figures are based on the census of 1870.

THE INDUSTRIALIST.

SATURDAY, DECEMBER 14, 1878.

JNO. A. ANDERSON, Managing Editor.

ASSOCIATE EDITORS, MEMBERS OF THE FACULTY.

Drawing.

Practical educators of all schools, however much they disagree in their theories about the importance of certain studies in the public schools, seem to coincide in regard to industrial drawing, by loudly demanding for it more attention and more time. Yet, somehow or other, things do not seem to move. In three-fourths of our district schools, drawing is not taught at all; and in the majority of the rest, it is badly neglected. Of all the students which we receive at the Agricultural College, for instance, scarcely five per cent have ever received any instruction in this branch, and of this small fraction less than one-fourth have ever been taught anything rational. I do not exaggerate this statement in the least, and we may therefore well ask, What is the matter?

My investigations lead me to believe that the deplorable state of instruction in industrial drawing is attributable in the main to two causes: First, the want of confidence on the part of the teacher in his own ability to learn drawing himself and to teach it to pupils; second, the want of proper methods of instruction to be followed in teaching, if the first obstacle can be removed.

That there should be a want of confidence on the part of the teacher in a country so full of brass, is a singular occurrence, especially when there is so little reason for it. This want of confidence prevents many at the outset from exploring the territory; and no wonder, if it associates itself subsequently with so much of the mystic as to appear from the distance like a land of giants. Yet, the idea that special aptitude or talent is required either to learn or to teach drawing is prevalent throughout the country, although entirely erroneous. Any person capable of learning any branch of study can learn to draw so as to be able to represent general forms with as much ease and certainty as he can speak or write, and this is all we aim at in the public schools. Drawing is a language, the language of form; and much has been gained if he is able to understand this language sufficiently well to convey his ideas to others by it. What would the world as it is do with a hundred millions of poets? And could we accommodate a like number of oil and water-color artists much better?

That we must follow a certain logical plan, a "method," in teaching or learning to draw, is self-evident. All educational experience suggests that the labor of acquiring a knowledge of drawing should be divided into proper stages; not requiring the work of developed skill from the inexperienced, nor withholding the most complicated exercises from matured practice. There may be many methods, but any method is is generally better than none. We must here, as well as in other branches, begin at the beginning, climb up slowly, have patience, work with a will, face all difficulties squarely, use common sense; and there will be little trouble.

Space does not permit me to speak at length of the different methods that are used in this country. I may speak of these in a subsequent article; but I will add that we use at the Agricultural College the work of Prof. Walter Smith, of Boston, with the best of success, and I heartily recommend it to the craft for a trial. The work, consisting of four courses, adapted to primary, intermediate, grammar and high schools, will meet the wants of all. It is thorough, systematic and cheap. Each course is supplemented by a teacher's manual. It may be had of Prang & Co., Boston, Mass. There are other works, perhaps equally good.

And now, teachers, as the winter locks you up in your studys, will you not send for some work on industrial drawing, and study it for the benefit of yourself and your pupils?—*J. D. Walters.*

Buying and Selling.

One element of success in the occupation of a farmer is good judgment as to the time to buy and sell property. Taking several years in succession, most kinds of property have an average or mean price. This is subject to considerable fluctuation, but it does not often remain a great length of time far to one side of this mean price. There are actions and reactions, pendulum swings in one direction or the other; and when there is a swing far in either direction, it is pretty certain that there will soon be a turn in the opposite direction. And, as a general rule, do not buy when property is at a very high price, and do not sell when it is at a very low price.

Many farmers seem to practice just the opposite rule. For instance, sheep-raising has been, for a few years, a profitable business. There begins to be a mania to buy sheep, consequently the price runs up; and when it gets up to the very highest notch, the farmer still thinks that it is a good business, and he buys a thousand sheep. Soon, wool begins to go down and with it the price of sheep. The farmer thinks it will be better next year or the following one, and holds on; but down it goes still lower, and by the time it is at the lowest notch, he is disgusted with sheep-raising and sells for whatever he can get. Now, if he had waited until all his neighbors wanted to sell sheep at low prices, and invested his money and got a good ready for the next rise in the market, and sold at high prices, he would have been financially a far more successful man.

When corn is down to fifteen cents a bushel, it is not the time to sell; crib it up. There is a strong probability that it will be much higher in less than a twelve-month. I have known farmers in Kansas to sell corn at twenty cents a bushel, and in less than eight months have seen those very men buy at one dollar a bushel. That was not success.

The same principle may be extended as to the time to raise certain crops, or certain kinds of stock. Suppose there have been two or three good years for raising wheat, a farmer who has not raised much says, "That pays well; I'll sow a hundred acres this fall." He does so and hits just the year of a failure in the crop, is disgusted with wheat-raising, and the next year sows none, which proves to be a very seasonable year. If he had thought of a possible failure and that it was more likely to come after several prolific years, he would have sown, that year, a little more cautiously; then, remembering that two failures rarely come in succession, he would have ventured more the following year. But, no, horses have been high for several years, and he says, "I'll try that business." He accordingly buys several brood animals at a very high price; but by the time his colts are ready for market, horses are way down in price, so that he makes no profit and is perhaps obliged to sell the animals he purchased at half their cost. If he had invested his money at the time horses were low, he would have had his colts ready to catch the rise in the market, and would have made a very handsome profit by the business.

These fluctuations are not exactly regular, and one cannot always make an exact calculation as to the time of the ebb and flow; but they are sure to come, and judgment can be used. As a rule, when an article has been low for some time, you are pretty safe in buying. At any rate, the man of good judgment will not arrange so as to both buy and sell just at the wrong time. When an article bears a high price, it is safe to sell without waiting for a higher.

Some years ago a farmer brought a load of potatoes to Manhattan and was offered $1.50 a bushel for them. Thinking he could get $2.00, he hauled them home again. A few months after, he offered to give those same potatoes to any one who would take them out of his cellar.—*Prof. Platt.*

Students Enrolled Since Sept. 4, 1878.

NAME.	COUNTY.
Abbott, Ella	Riley.
Abbott, Frank	Riley.
Abbott, Harmen	Riley.
Adams, Emma L.	Riley.
Allen, Chester	Mitchell.
Anthony, Mollie	Cherokee.
Ashmead, George R.	Ellsworth.
Ayres, Sarah	Shawnee.
Barnes, E. M.	Osage.
Bates, Charles W.	Vermont.
Beacham, Augustine	Marshall.
Blain, Arthur T.	Riley.
Bowles, Louis C.	Johnson.
Breakbill, John	Riley.
Browning, Abbie L.	Riley.
Browning, Emma	Riley.
Buchli, Bartholomew	Wabaunsee.
Buell, Delight A.	Riley.
Burr, Elisha	Davis.
Butts, Halleck D.	Jefferson.
Campbell, Emma	Riley.
Campbell, Ettie A.	Riley.
Campbell, May	Riley.
Carter, John E.	Shawnee.
Chenoweth, Charles C.	Cherokee.
Clarke, Mary	Riley.
Coburn, Ella	Saline.
Coe, Henry F.	Missouri.
Coe, Jennie A.	Missouri.
Coleman, Edward P.	Iowa.
Cox, Lizzie R.	Riley.
Cripps, Edward V.	Riley.
Dickson, A. F.	Johnson.
Dickson, James B.	Johnson.
Donaldson, Alvin	Butler.
Donaldson, Flora	Butler.
Donaldson, George	Butler.
Dow, George H.	Riley.
Eckman, Wilmer K.	Osborne.
Edmiston, Dora	Illinois.
Emrick, Katie	Pennsylvania.
Everhart, Logan W.	Labette.
Farnsworth, Henry E.	Lincoln.
Finley, Charles A.	Jackson.
Flack, John B.	Dickinson.
Foreman, Albert M.	Riley.
Friend, Edward	Jefferson.
Glossop, Emma	Riley.
Goin, Edgar L.	New York.
Gordon, George A.	Jackson.
Gregg, Frank B.	Coffey.
Griffing, William J.	Riley.
Gross, W. E.	Saline.
Hatch, Linda	Republic.
Hicks, E. C.	Cherokee.
Hicks, Wm. G.	Cherokee.
Hillyer, William J.	Jefferson.
Himes, Hattie	Riley.
Hosmer, Mina	Riley.
Houston, Hortense	Riley.
Howden, George W. N.	Chautauqua.
Hulett, C. M.	Johnson.
Humphreys, George	Sumner.
Hunt, Henry L.	Cherokee.
Hutsell, Sallie	Cherokee.
Jacobs, James H.	Cherokee.
Jaquith, Walter W.	Davis.
Jeffrey, William J.	Riley.
Jeffrey, Fletcher	Riley.
Jewell, Fred	Butler.
Jones, Horace B.	Wabaunsee.
Kent, John H.	Riley.
Keyes, George C.	Wabaunsee.
Kingsbury, Eddie L.	Coffey.
Kinsey, Dora	Shawnee.
Knipe, George D.	Riley.
Knostman, Emma	Riley.
Leach, Darwin S.	Mitchell.
Lewis, Issie	Riley.
Lewis, Jno. W.	Riley.
Lewis, Samuel O.	Lyon.
Light, Willis	Neosho.
Limbocker, Clyde	Pottawatomie.
Limbocker, Clarence	Pottawatomie.
Luse, William P.	Missouri.
Lynch, Fred C.	Cherokee.
Lynch, James H.	Cherokee.
Mails, Mattie	Pottawatomie.
Mann, John	Rice.
McBratney, William	Nemaha.
McGuire, Katie I.	Johnson.
McNair, Alice E.	Wabaunsee.
McNair, J. L.	Wabaunsee.
McNair, S. E.	Wabaunsee.
Merrill, James	Shawnee.
Messenger, Charles	Cowley.
Miller, Edgar	Davis.
Millikan, Minnie E.	Johnson.
Mills, Hattie L.	Missouri.
Moore, Thomas R.	Smith.
Morgan, S. M.	Lyon.
Morrow, John N.	Johnson.
Myers, Wirt S.	Allen.
Neiman, Charles	Nemaha.
Neusbaum, Ada A.	Riley.
Neusbaum, Lincoln H.	Riley.
Noland, Manda	Riley.
Noyes, Amy E.	Wabaunsee.
Noyes, Ida L.	Wabaunsee.
Outt, J. F.	Montgomery.
Paine, Edwin C.	Lyon.
Parker, Grace	Riley.
Pettit, D. C.	Cherokee.
Pfoutz, William A.	Atchison.
Platt, Henry A.	Riley.
Randel, Alta	Nemaha.
Randel, Charles F.	Nemaha.
Randel, Henry A.	Nemaha.
Records, C. M.	Chautauqua.
Reed, C. J.	Pottawatomie.
Reed, Willie S.	Riley.
Reeve, Mark A.	Lyon.
Richards, Bettie	Pottawatomie.
Richardson, Noble A.	Wilson.
Rollings, W. E.	Ottawa.
Rose, George E.	Cherokee.
Rose, Wm. N.	Cherokee.
Rushmore. H. C.	Jefferson.
Rust, Charles	Atchison.
Salter, Lewis A.	Montgomery.
Scott, Nannie	Cherokee.
Shartell, Cassius M.	Chautauqua.
Sickels, Maria E.	Missouri.
Sigman, George L.	Chautauqua.
Sikes, Wm. H.	Pottawatomie.
Sloan, John A.	Clay.
Smith, B. B.	Dickinson.
Snow, Cora L.	Riley.
Southwick, Charles A.	Riley.
Spicer, Joseph C.	Lyon.
Spooner, Alice G.	Clay.
Stiles, Charles H.	Wabaunsee.
St. John, John	Johnson.
Stoner, Fannie A.	Atchison.
Strong, Grace R.	Riley.
Talbott, John R.	Atchison.
Tarrant, Will S.	Cowley.
Thomen, R. O.	Davis.
Thompson, George F.	Cowley.
Throckmorton, George	Coffey.
Travis, Jared M.	Wilson.
Tunison, Frank	Cherokee.
Vaught, Cora	Butler.
Vincent, Ella E.	Riley.
Wahl, Charles A.	Indiana.
Wahl, Fred E.	Indiana.
Wahl, Wm. H.	Indiana.
Ward, J. W.	Cherokee.
Welch, C. R.	Harvey.
Whaley, Rowena	Riley.
Whaley, Willie E.	Riley.
Whiteside, Wm. A.	Cherokee.
Williston, Frank H.	Riley.
Wilson, Elmer E.	Cherokee.
Wood, Clarence E.	Pottawatomie.
Woodburn, William	Nemaha.
Woods, Albert O.	Sumner.
Woodworth, J. W.	Cherokee.
Wright, Robert H.	Ford.
Wyland, T. J.	Jewell.

THE INDUSTRIALIST.

SATURDAY, DECEMBER 14, 1878.

The term will close on Friday next.

The next term will open on Friday, January 3d, 1879.

Architect E. T. Carr, of Leavenworth, was here Friday, inspecting the new building.

Prof. VanDeman returned last Monday. He came home sick, and has not been able to hear his classes this week.

The name of Logan W. Everhart, Labette county, was omitted from the list of students lately enrolled, which we published last week.

We have had two snow-storms in the past week, one of which exceeds in severity any storm since March, 1876. Guess we'll have ice enough this winter.

One hundred and seventy students have been enrolled this term. From present indications, this number will be considerably increased during the next term.

Already the members of the Senior Class of '79 are receiving special attention from their many friends. Last evening, by invitation, they gathered at the residence of Prof. Shelton, and were royally entertained by the Professor and his estimable wife.

Miss Coburn, one of our students from Saline county, received a telegram last Wednesday night stating that her father was dangerously ill. The young lady went home on the four o'clock train, Thursday morning. We have since learned that Mr. Coburn died before his daughter reached home.

We have received the first biennial report of the Kansas Institution for the Education of the Deaf and Dumb, for the years 1877-8. The document is replete with information of every character concerning the institution which it represents, and fully justifies the assertion that the business of the State at Olathe is in competent hands.

Thomas Morgan, our farm foreman, has deserted the old stone building in front of the Laboratory and moved into the dwelling house at the foot of the hill, east of the College. This house has lately been repaired and renovated generally, and now makes a comfortable home for Tom and his family. It is to be hoped that the stone building will soon disappear, giving way to the green sward, which will certainly be as beautiful and far more acceptable.

The present Senior Class is composed of two ladies and ten gentlemen—just an even dozen. Below we give their names and the counties from which they hail: *Cherokee county*—James H. Lynch; *Jefferson*—Harry C. Rushmore; *Johnson*—Turner M. Hulett; *Montgomery*—Lewis A. Salter; *Osborne*—Wilmer K. Eckman; *Pottawatomie*—Corvin J. Reed, William H. Sikes and Clarence E. Wood; *Rice*—John Mann; *Riley*—Arthur T. Blain, Miss Ettie A. Campbell and Miss Ella E. Vincent.

The December number of that excellent periodical, the *American Young Folks*, has reached our table. The *Young Folks* is a genuine boys' and girls' paper of a high character, free from blood-and-thunder sensational trash, and at a low popular price, which every family can afford to pay. During 1879 the paper will be richly illustrated, printed on book paper, and carefully edited. Those desiring to examine the *Young Folks* should send for a specimen copy. Messrs. Hudson and Ewing, publishers, Topeka, richly merit the success which has rewarded their untiring energy and enterprise in this field of labor, and we trust that the publication will continue to be the favorite of the young people.

The term examinations will be held next Thursday and Friday, in the several recitation rooms, as follows:

THURSDAY.

8:40 to 10:20.—*Geology, *Physiology (1), †Drill in English, †Industrial Drawing, Printing, Carpentry, Telegraphy.

10:20 to 12:00.—*Rhetoric (1), *Advanced Practical Agriculture, *Botany and Entomology (1), †Algebra (1), †Hygiene, †Industrial Drawing, Printing, Carpentry, Blacksmithing, Sewing.

2:00 to 4:00.—Parliamentry Law and Political Economy, Algebra (2), Industrial Drawing, Carpentry and Blacksmithing.

FRIDAY.

8:40 to 10:20.—*Rhetoric (2), *Inorganic Chemistry, †Household Economy, †Drill in Arithmetic (1), †Industrial Drawing, Printing, Sewing.

10:20 to 12:00.—*Geometry, *Physiology (2), *Botany and Entomology (2), †Drill in Arithmetic (2), †Industrial Drawing, Printing, Carpentry, Blacksmithing.

*Oral the first half, written the second half.
†Written the first half, oral the second half.

The Websters were prevented from holding a meeting on Nov. 30th. Met again last Saturday night; and, considering the weather, quite a number of the boys exhibited their pluck by putting in an appearance at that time. Because the term is so near its close, we will have to report once without mentioning a proposition for membership, or initiation of a candidate. The usual exercises were participated in with interest. A number of committees reported, showing that the Society is flourishing. On next Saturday evening, we hold our last meeting. The *Reporter* will be presented, and a first-class editorial is anticipated. The order of debate will be passed at next meeting. Otherwise, the proceedings will be as usual. We are going to have a good time. Won't you come and visit us? MERCURIUS.

This week we republish the list of students enrolled during the present term. There are one hundred and seventy of them, and we give below the representation from counties and States. The percentage of students from Riley county is smaller than ever before; and Cherokee, the south-eastern county of the State, sends the next largest delegation:

COUNTIES.

Allen	1	Lyon	5
Atchison	4	Marshall	1
Butler	5	Mitchell	2
Chautauqua	4	Montgomery	2
Cherokee	18	Nemaha	6
Clay	2	Neosho	1
Coffey	3	Osage	1
Cowley	3	Osborne	1
Davis	4	Ottawa	1
Dickinson	2	Pottawatomie	7
Ellsworth	1	Republic	1
Ford	1	Rice	1
Harvey	1	Riley	*42
Jackson	2	Saline	2
Jefferson	4	Shawnee	4
Johnson	8	Smith	1
Jewell	1	Sumner	2
Labette	1	Wabaunsee	9
Lincoln	1	Wilson	2

*Only 17 from Manhattan.

STATES.

Illinois	1	New York	1
Indiana	3	Pennsylvania	1
Iowa	1	Vermont	1
Missouri	5		

Counties, 38; States, 7; Students, 170.

During the month of November, the following students reached the first rank, having made an average grade of ninety-five or over:

Butler County—Alvin Donaldson.

Chautauqua County—Cassius Shartell and George L. Sigman.

Cherokee—C. C. Chenoweth, Sallie Hutsell, James H. Lynch, George Rose and Wm. Rose.

Clay—John A. Sloan.

Coffey—George Throckmorton.

Cowley—Charles Messenger and G. F. Thompson.

Davis—Walter Jaquith and R. O. Thomen.

Harvey—C. R. Welch.

Iowa—Edward P. Coleman.

Jefferson—H. C. Rushmore.

Jewell—T. J. Wyland.

Johnson—C. M. Hulett and J. N. Morrow.

Lincoln—Henry Farnsworth.

Missouri—Henry Coe, Jennie Coe and Maria E. Sickels.

Mitchell—Chester Allen and Darwin Leach.

Montgomery—Lewis Salter.

Osborne—Wilmer K. Eckman.

Ottawa—W. E. Rollings.

Pottawatomie—W. H. Sikes and C. J. Reed.

Rice—John Mann.

Riley—Emma Adams, Arthur Blain, Ettie Campbell, Lizzie Cox, Wm. Jeffrey, Fletcher Jeffrey, Ella Vincent and Clarence Wood.

Saline—Ella Coburn.

Shawnee—Dora Kinsey.

Smith—Thomas R. Moore.

Vermont—Charles Bates.

Wabaunsee—Amy Noyes, Ida Noyes and Charles H. Stiles.

Wilson—Noble Richardson.

They have a blacksmith shop attached to the "industrials" of the Agricultural College at Manhattan. Instructions are given in working iron and scientific horse-shoeing.—*Independence Kansan.*

Among our exchanges we are always glad to receive the *Industrialist*, published in the interest of the Agricultural College of this State. It is full of useful as well as entertaining reading matter. It especially deserves the patronage of the industrial men and women of Kansas.—*University Courier.*

The INDUSTRIALIST, published under the auspices of the Kansas State Agricultural College, at Manhattan, is one of the prettiest papers in the West. Its pages give ample evidence of editorial ability and mechanical skill. The typographical force of the College may well be proud of its paper. —*Independence Kansan.*

NATIONALIST ITEMS.

The Baptist Sunday School is to have a first-class library.

Albert Disbrow has started a candy factory, and will manufacture all home-made kinds.

The new elevator is to hold thirty-eight or forty car loads of grain—about 480 tons—at one time.

Purcell is having a stone gutter laid around the edge of the sidewalk on the east side of his store, to prevent mud.

The two monster elevators now being erected in this city and St. George will cost as much, it is estimated, as our new school-house.

G. L. Ruthstrom, one of the substantial farmers of Fancy Creek, brought down forty head of fine hogs on Tuesday. He sold last week and realized $2.10 per hundred.

The spindles in operation in the Blue Rapids woolen mill number 850. Forty-nine operatives are employed, and the factory now uses over 200,000 pounds of wool per year.

More trading is being done in Manhattan at present than we ever knew before. The streets are full of wagons from the country nearly all the time, loaded with produce of different kinds, which are being exchanged for goods, money, etc.

Tax-paying has commenced in earnest, and the present indications are that a greater number will pay all their taxes by the time the first half is due, and get the five per cent rebate, than heretofore. This is the best proof we could have of general prosperity.

President Anderson delivered his lecture "Kansas" to a large and appreciative audience at the Presbyterian Church, Thursday evening of last week. Mr. Campbell said, on introducing him, "President Anderson needs no introduction to a Manhattan audience." We would say, President Anderson needs no words of praise from a Manhattan paper.

The low price paid for hogs does not seem to lessen the number brought to this market. There has been an increase each day for several days past, and still the country is full. The low price paid for corn has caused farmers to feed hogs more than usual, on account of their being easier to throw on the market. But most of those we have talked with say they had rather put their corn into hogs, even at the present price, than to sell corn for less than twenty cents.

DIRECTIONS TO APPLICANTS.

TERMS OF ADMISSION.

Candidates for admission must be fourteen years of age, and pass a satisfactory examination in reading; arithmetic, through decimal fractions; and English grammar, to syntax. Classes are started at the beginning of each year in Drill in Arithmetic and Drill in English; and the pupil must have the knowledge above indicated, else he will be unable to retain position if admitted.

Pupils will be received at any time during the year, if able to pass an additional examination upon the subjects studied by the classes which they expect to enter. But they will find it greatly to their advantage to be present at the opening of each term, or as soon thereafter as posssble.

GRADES.

Both the Literary and Industrial recitations are graded daily upon a scale of 100; and an examination of all classes is made at the close of each month. A student not attaining an average grade of sixty is promptly dropped to a lower class, or excluded from the Institution until able to do so. The work of grading is strict and uniform in all the departments, and this process is rigorously used for sifting out incompetent and indolent pupils; thus more than accomplishing all that is designed to be effected by a "high standard of admission." Hence, the student's continuance in the College wholly depends upon his own action.

The course is based upon the determination to make the labor required in the preparation of one industrial and three literary recitations as much as the average student can perfectly perform, in ten hours a day. We design to give the pupil the worth of the time expended at College; and, in order thereto, he must do a full day's work with brain or hand. Only those students who can maintain a standing of ninety in each study will be allowed to take more than the prescribed number of recitations; and no one will be permitted to have less than one industrial and three literary recitations.

RELIGIOUS.

Unless otherwise directed by parents, students are required to attend chapel at 8:30 A. M. on academic days, and divine service once every Sabbath.

EXPENSES.

There are no charges whatever for enrollment, attendance or instruction in the regular courses; nor are there any "contingent fees" for the repair of buildings, for the use of books or apparatus, for diplomas, or the kindred privileges usually grouped under the term "contingent." Male students are furnished instruction, the use of apparatus, instruments or tools, in both the literary and industrial classes marked out for them, without any charge. And the same is true of female students in the regular classes provided for them. Printing and Telegraphy are industrials primarily provided for the education of female students, and male students taking either of these are charged $1 per month for use of instruments.

Instrumental music is a fine art or "accomplishment," rather than a mechanical art. We do not place it among our "industrials" in the same sense, or for the same purpose, that we do those provided for teaching the trades. Accordingly, a fee of $12 per term, or seventy-five cents per week is required from female students for tuition and the use of pianos or organs.

The only charge made for material in either the literary or industrial departments is for the chemicals used by students in laboratory practice, which are furnished at wholesale prices, and amount to but a small sum.

Furnishing an absolutely free education is as much as can be reasonably asked; and the Institution neither boards, clothes, nor supplies the student with text-books. Boarding can be obtained in private families at from $2.75 to $4 per week. Washing costs from seventy-five cents to one dollar per dozen. Text-books, which can be procured in Manhattan, cost from $2 to $5 per term.

No student need expend over $5 per week; and many of our best pupils are living at $1.25 per week. Students desiring to "board themselves" can do so at from $1 to $2 per week. In a club of four young men, renting a house, the average cost to each for the term was $1.11 per week.

LABOR.

Manual labor by the students may be for either of two purposes: First, to acquire skill in a given art; second, to earn money. In the first case, the labor is educational; in the second, it should be paid for by the party benefited.

Educational Labor.—Manual labor in the reciations of the Industrial Departments, like mental labor in those of the Literary Departments, is purely educational and will not be remunerated. While the interest of the student will be held paramount in the direction of this labor, the practice necessary to dexterity will be required.

Remunerated Labor.—When the Institution needs labor on the Farm or elsewhere which is not educational, but simply for its own profit, and which a student is able and willing to perform, it becomes an employer instead of a teacher, and he an employe instead of a scholar. It pays for work, he works for pay. The relation between them is commercial, not educational; and both parties must act upon business principles. Hence, the College furnishes only such employment as its own interests require, and will pay according to the value of the service rendered at from seven to ten cents an hour.

AMOUNT EARNED.

It is impossible to predict how much a given person can earn, since that depends upon what he can do and what work there is to be done. Hence, it is wholly impossible for us to answer the question so often asked: "Do you think I can meet my expenses by work?" Some students make one-half their expenses, some the whole, and exceptional men have made more than expenses. As a rule, a faithful boy skilled in farm work can earn half his expenses on the Farm or in the Nursery. During the year he can ordinarily acquire sufficient skill in the wood or iron shops to enable him to make articles for sale. The whole question is one for his own consideration and decision. We can teach all who come, but cannot absolutely *promise* anything more. Hitherto we have refrained from holding out strong inducements respecting the amount of labor we might have to offer; but in view of the fact that during each of the last three years we have had more to do than the students could perform, we are inclined to give greater and positive encouragement on this point. Any boy who is in dead earnest, who is familiar with farm operations, and who can raise $50 to start with, should be able to carry himself through the four years' course. And certainly this places an education within the reach of every determined boy. As yet we are unable to offer similar advantages to girls, not requiring labor in the College departments which they can perform.

RULES.

1. Behave as a true man or woman should, at all times and in all places.

2. Attend to your own business promptly, thoroughly and courteously; and vigorously let alone that of other people.

3. Penalty: "Leave!"

PUBLICATIONS.

The "Hand-Book," published in 1874, containing a full discussion of the educational question and the aims of the Institution, will be forwarded to any one desiring it.

THE INDUSTRIALIST, a weekly journal edited by the Faculty and published by the Printing Department, contains original and seasonable articles on the Farm, Orchard, Trades, Sciences, and Education. Price, 75 cents a year. Address A. A. Stewart, Manhattan.

CALENDAR.

Fall Term 1878.—Begins Wednesday, September 4th, and closes Friday, December 20th.

TO NEW STUDENTS.

Bring the text-books you have been using. On arrival, first arrange for your boarding. A. A. Stewart, Sup't Printing Department, will furnish information, either by letter or on application, concerning boarding places or rooms for rent. Report to the President at 8:30 A. M., immediately after chapel, for enrollment.

For further information apply to Jno. A. Anderson, President, Manhattan, Kansas.

RAILROAD TIME-TABLE.

KANSAS PACIFIC RAILWAY.

PASSENGER ARRIVES.

No. 2, going East	11:14 A. M.
No. 4, going East	3:47 A. M.
No. 1, going West	5:10 P. M.
No. 3, going West	4:33 A. M.
No. 7 (freight), going West	8:15 A. M.

Nos. 1 and 2 run daily; Nos. 3 and 7 run daily except Monday; No. 4 runs daily except Sunday. Passengers with tickets are carried on No. 7.

GEO. C. WILDER, Agent.

KANSAS STATE AGRICULTURAL COLLEGE.

INDUSTRIAL EDUCATION.

The real value of an education to the student depends upon two things: First, the practical worth of the knowledge taught; and, second, the degree in which he makes it his own. Hence, the ability of any institution to give a practical education depends upon the kind and aim of the knowledge it teaches, and upon the thoroughness of the instruction therein. The State Agricultural College was directly endowed by Congress, and is guided by the State, for the specific purpose of furnishing to the industrial classes of Kansas a "practical" education, that is, "one fit for use." As its name indicates, and as the statistics of the industries of the State require, its chief work must be that of giving a useful and usable education to those who will engage in farming; and, therefore, the Farmer's Course must, from the nature of the case, be its main one.

FARMER'S EDUCATION.

Words and figures are merely instruments with which to record ideas. They are not themselves ideas, nor should they be made the chief end of an education. As a wagon is necessary to haul grain, so are they a necessary part of an education; but as the wagon is not the grain, so they are not the knowledge which the farmer converts into money. Hence, the classics and higher mathematics are not taught. But it will be noticed in the following course that so soon as the pupil acquires working skill in the use of the English language as a tool, and of figures and lines as mathematical tools, those arts and sciences which present knowledge that has a cash value to the farmer are taught as rapidly as their importance and thorough acquisition will permit. Studies numbered (1) and (4) in the second, third and fourth years are the spine of the course, to which the others are as ribs and muscle.

FARMER'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Practical Agriculture (advanced.)		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit. Economy, Practical Law.		3. Practical Geometry.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. Practical Agricul. (elementary).		4. English Structure.	
5. Agricul. Chemistry, Meteorology.		5. Organic, Analytical Chemistry.		5. Physics.		5. Adv'd Arithmetic, Book-keeping.	
6. Logic.		6. Practical Surveying.		6. Industrial Drawing.		6. U.S. History, Industrial Drawing.	

WOMAN'S EDUCATION.

Nearly one-half of our students are females, and the Woman's Course is prepared expressly for their liberal and practical education. We have no doubt whatever that practical men and women, who understand what it means and what it seeks to do, will fully endorse it.

WOMAN'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Farm Economy, Special Hygiene.		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit'l Economy, Practical Law.		3. Industrial Drawing.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. English Literature.		4. English Structure.	
5. Phys'l Geography, Meteorology.		5. Organic, Household Chemistry.		5. Physics.		5. Adv'd Arith., Book-keeping.	
6. Logic.		6. Household Economy.		6. Industrial Drawing.		6. U. S. History, Industrial Drawing.	

MECHANIC'S EDUCATION.

Because of the adaptedness of the leading course to the wants of the intelligent mechanic, it has been found practically unnecessary to diverge from the Farmer's Course. Additional studies, specially adapted to the mechanic's use, will be furnished in a Post-Graduate's Course.

If it be urged that the distinctively agricultural knowledge taught in the Farmer's Course is not directly valuable to the mechanic, we reply that, admitting the point for the purpose of argument, yet: 1. This knowledge is of more practical value to the mechanic than is the Latin, Greek, or a half dozen other things embraced in the usual course preparatory to the professions; 2. That the great majority of Kansas mechanics will also be more or less engaged in agriculture; 3. That those studies in the course which are directly valuable to the mechanic, together with the shop facilities, offer a better mechanic's education than can be elsewhere found west of the Alleghanies.

INDUSTRIAL DEPARTMENTS.

Having knowledge in the head is one thing; ability to use it with the tongue, fingers or feet is quite another thing. Both are vital to success in practical life. A man might thoroughly understand the theoretical principles of carpentry, and yet, not having used the tools, be wholly unable to earn carpenter's wages. So in all other vocations. Accordingly, instruction is given in the following well-equipped Industrial Departments, and every student is required to recite in some one of them, as selected by the pupil or parent:

FOR MALE STUDENTS.	FOR FEMALE STUDENTS.
The Farm.	Dress-making.
The Nursery.	Printing.
Carpentry.	Telegraphy.
Cabinet-making.	Scroll-sawing.
Turning.	Carving.
Wagon-making.	Engraving.
Painting.	Photography.
Blacksmithing.	Instrumental Music.

Each of these departments is conducted exactly as in daily life, and aims to give precisely the drill received by an apprentice. No charge is made, either for tuition or material, from male students taking the Industrials provided for them; nor from female students taking the ones provided for them, except in the Department of Instrumental Music. Male students taking either Printing or Telegraphy are charged $1 per month for the use of material and instruments.

DEPARTMENTS OF INSTRUCTION.

DEPARTMENT OF AGRICULTURE.

PRACTICAL AGRICULTURE.

Second Year:—General principles of breeding; history and characteristics of breeds; adaptation of different breeds for special purposes and localities; implements of simple tillage; mechanical principles involved in their construction; act on of the plow upon soil and subsoil; principles of draught; influence of different adjustments upon draught; use of the dynamometer; value of hoed crops in a system of husbandry; the cultivation of corn and roots; soils that need drainage; how to lay out a system of drains; house drainage; sewerage.

Fourth Year: General view of agriculture, ancient and modern; agricultural progress of the last century; relative advantages of mixed husbandry and special farming; the selection and arrangement of the farm with reference to the system to be pursued; rotation of crops; general advantages of a rotation; the best rotation with reference to disposition of labor, production of manure, and extermination of weeds; pasturage and production of grain and forage crops; manures, how best housed and applied; composting manures; commercial fertilizers; systems of feeding; stall feeding; steaming food; soiling; experiments in feeding; farm buildings; farmhouses; barns.

FARM ECONOMY.

Woman's Course, Fourth Year: Dairy products as human food; influences affecting character of milk; manufacture of condensed milk; the factory system and household plan of cheese-making; treatment of rennet; general process of cheese manufacture; subsequent treatment of cheese; butter-making; creameries; "deep" and "shallow" setting systems; general process of butter-making; packing and preserving butter.

DEPARTMENT OF BOTANY AND PRACTICAL HORTICULTURE.

This department embraces a course of instruction in the elements of botany, structural and systematic, with a constant attention to the practical application of botany to the farm, orchard, garden, nursery and forest; also a course of lectures on Landscape Gardening. The instruction is mainly given by lectures, accompanied by regular practical drill in all the work of the fruit, vegetable and flower gardens, nursery, orchard, vineyard and ornamental grounds.

The lectures in Practical Horticulture embrace the following and kindred subjects: The relation of atmospheric motion, moisture and temperature to horticulture; seeds, the means of collecting and preserving; propagation, by seeds, cuttings, layers, suckers, grafting, budding; care of young plants; improvement of varieties; management of commercial and farm nursery; modes of pruning; the orchard; fruit suitable for orchard and garden culture; the flower, vegetable and fruit garden; importance and mode of forest culture; shelter belts and their influence; weeds and useful plants; noting the species of trees worthy of culture, either for profit or ornament.

LANDSCAPE GARDENING.

The lectures on Landscape Gardening not only unfold the accepted principles of the art, but at the same time give special attention to such applications of the art as may be made universally available in laying out and improvement of farms and the homes of the people. These lectures are accompanied by a practical drill in in the work of laying out and plotting grounds topographically.

CHEMICAL DEPARTMENT.

PHYSICS.

This includes a full consideration of the laws of mechanics, of liquids, gases and vapors, weights and measures, and specific gravity, followed by experimental study in the Physical Laboratory of the laws of heat, light, with spectrum analysis, electricity and magnetism, and the relation of these forces to plant and animal life. Text-book, Ganot.

INORGANIC CHEMISTRY.

This course is opened with a careful study of chemical forces and the laws governing chemical combination. The elements, with their compounds, are next considered in succession as to their history, properties, manufacture, and especially with regard to their uses on the farm and in the arts. These lectures are accompanied by an extended course of laboratory practice in which each student performs every experiment with his own hands. Text-book, Eliot & Storer.

ORGANIC CHEMISTRY.

This comprises a thorough study of the chemistry of the organic compounds, the composition of plants and of the various compounds derived from them. Constantly accompanied by laboratory practice.

CHEMICAL ANALYSIS.

In this course each student is furnished his stand in the Qualitative Laboratory, completely furnished with apparatus and chemicals for his own use. He here performs analyses of farm soils, plant ash, commercial manures, ores, mineral waters, commercial compounds, etc. After completing this course, he enters, if he desires, the Quantitative Laboratory, where he pursues a full course in quantitative analysis. Text-book, Kedzie's Manual.

AGRICULTURAL CHEMISTRY.

This includes a thorough consideration of the application of chemical principles to the economy of the farm; the origin and formation of soils; the classification and composition of soils; the analysis of soils and their adaptation to purposes of production; the composition and use of manures; composting; chemistry of farm operations, such as plowing, fallowing, draining, etc. Text-book, Johnson's "How Crops Feed."

METEOROLOGY.

Embracing the composition of the atmosphere; atmospheric pressure; temperature and humidity; laws of storms; rain, snow and atmospheric electricity. A full course in meteorological observations is taken under direction of the Signal Service. Text-book, Loomis' Meteorology.

MINERALOGY.

This includes the study of the laws of crystallography, with the properties, forms and uses of the principal minerals of the United States. Blowpipe analysis forms a very important part of the course, each student being required to name and identify a large series of minerals. Text-book, Dana's Mineralogy.

HOUSEHOLD CHEMISTRY.

A course of lectures on this subject is yearly delivered to a class of young ladies. The course embraces the chemistry of cooking; the composition of food; bread; tea, chocolate and coffee; butter and milk; ripening and preservation of fruits, etc.

SPECIAL COURSES

Are constantly in progress in Assaying, Pharmaceutical Chemistry and Photography.

ENGLISH LANGUAGE.

Words are simply tools used to express ideas; and, since the vast majority of our communications are made by the employment of spoken or written words, skill in using them is as profitable to the industrialist as dexterity with the needle is profitable to the seamstress. The direct aim of the course is to make the student skillful and intelligent in handling the machinery called language, just as an engineer handles a locomotive; and no drill will be omitted, or effort spared, to gain this end. Apart from the course itself, which is far more practical and complete than that usually found in literary colleges, the constant attention given this subject by all the departments, and especially the practice required in the printing classes, affords superior advantages to the student.

DRILL IN ENGLISH.

"As grammar was made after language, so ought it to be taught after language."—*Herbert Spencer.*

Drill in English embraces the following topics:

Sounds of the language; drill in producing the vocal, sub-vocal and aspirate elements with accuracy, distinctness and volume; vowels, consonants.

Letters: Form; power; rules for spelling, drill.

Words: Signification, properties, modifications, variations, relation and dependence.

Sentences: Drill in statement of ideas; description, clearness, terseness, vigor; business letters, discussion; capitalization; syllabication; punctuation; construction and analysis of sentences; elements, uses and names; criticism of compositions printed as written; proof reading; grammatical construction; superfluous words and clauses; drill in reading, speaking and penmanship.

Text-books: Webster's Academic Dictionary; Lee & Hadley's Advanced Lessons in Language.

Pupils deficient in spelling, etc., should enter the printing class, the printing-office being the work-shop of language.

STRUCTURE OF ENGLISH.

ELEMENTS OF WORDS.—The end aimed at in this study is to learn everything about words which will aid in their effective use. Among the topics included are:

Roots: What are they; their origin; their force and value as an element of language; the manner of their growth into different parts of speech.

Stems: Their derivation; their offices and properties; their relation to other parts of words.

Prefixes and Suffixes: The several sources whence derived; the relation of their force or significance to those sources; explanation of the laws and principles governing their use along with stems.

Compounds: Their value; their properties and uses; the laws governing their formation.

Synonyms: Definitions; causes of their abundance in English; the principles to be observed in choosing among them, to express a thought.

Criticism: This constitutes a prominent part of the exercises of the pupil through his whole course in the study of English. It not only diversifies and enlivens the class-room exercise, but reduces to practice the principles of the structure of the language. By this means, the student acquires not only a knowledge of English, but readiness and accuracy in speaking or writing it. The exercises in criticism embrace not only examination of selected matter, but original composition.

ELEMENTS OF SENTENCES.—The purpose in view in studying this subject is not to traverse the ground gone over in the study of grammar, but to fix in the mind of the student a clear understanding and remembrance of names, the properties and offices of the several classes of words entering into an English sentence, by showing him the reason of things; to make more simple, as well as interesting and practically useful, a study otherwise "dry and unprofitable" in many cases, by explaining the reason of the verbal forms and changes, the rules and maxims he is to remember and observe in his use of language. In the same manner he is conducted through a study of the mutual relations and dependencies of the several elements making up a sentence.

MATHEMATICAL DEPARTMENT.

Figures and lines, like words, are only instruments with which to convey ideas, or perform operations that cannot be easily done without them. The arithmetical principles used in business are few and simple; but accuracy and rapidity in computation are only gained by practice. College graduates often fail to retain clerkships, not because they do not know *why* given operations are performed, but because they can neither add, multiply or divide with that habitual correctness which renders their work reliable.

DRILL IN ARITHMETIC.

The chief design of this study is to make the student expert in the use of numbers, as employed by the industrialist for profit. The occupation of a successful farmer demands the application of every principle of practical arithmetic, and is taken as a starting point, rather than that of an abstract system. Beginning with a simple cash account, book-keeping is gradually developed to the full extent of its real utility. The areas of fields, expense of crops, construction of houses, sales of produce, and investment of capital, involve all the fundamental operations, and those of profit and loss, commission, taxes, insurance, exchange and stocks. Following this line, the student, so far from hammering away at "pure" science draws from the mathematical store-house what he needs, and sees why he needs it. Accuracy of calculation and posting, rather than a *mere* comprehension of the principles, is aimed at. Besides the recitation-room drill in business forms, practice in the field is also given. Estimating the number of cords in a pile of wood said to be 100x4x4 feet is one thing; measuring a pile of wood through which any number of cats may be harmlessly thrown, and in which four-feet sticks are the exception, is quite another and more difficult thing.

ARITHMETIC AND BOOK-KEEPING

Is a continuation of the above, having the same purpose and adopting such methods as the necessities of the class indicate. Thorough instruction in the principles and forms of business law is given. It will be seen that this method of teaching book-keeping, besides ensuring arithmetical practice, develops practical skill in that important art.

ALGEBRA.

Algebra is included in the course as a preparation for the study of Surveying.

DRAWING.

The practical value of Industrial Drawing can hardly be overestimated, first, because its study is the best drill for the development of the perceptive faculties, which are the ones most employed in daily life; and, second, because the working classes make a far greater use of lines than they do of figures. A farmer follows a line when laying a straight furrow; the carpenter uses the square and rule twenty times as often as he does figures; and a woman in cutting a pattern, or deciding that one bonnet is prettier than another, does so by the line or "form." So that either in its direct application, or in the exercise of that taste which comes from skill in using lines, this branch of mathematics is quite as important as a means of "mental discipline" as is the branch of computation, and is of far greater daily use. The admiral system of Prof. Walter Smith, Art Director of Massachusetts, is thoroughly followed through the grades of Free-hand, Geometrical, Object, Model, Perspective, Mechanical and Topographical Drawing, during the terms indicated by the Course of Study. In addition, constant practice in the application of lines to metal and wood is furnished in the Blacksmith, Carpenter, Turning, Scroll-sawing, Carving, Engraving and Printing shops, and to fabrics in the Sewing Department.

PRACTICAL GEOMETRY.

Not one farmer in a thousand ever uses the transit in surveying his land, the testimony of the county surveyor being decisive in court; but every farmer makes countless applications of lines and angles in laying off fields, roads, gardens, planning houses, determining levels, etc. The object of Practical Geometry is to teach the properties and uses of angles, and to make the student skillful in the application of lines to the field by the use of such simple instruments as are always within reach, or within his ability to construct; and accurate in the transferring of plans to the grounds, board or block.

PRACTICAL SURVEYING.

The drill in the use of figures and lines given by the mathematical course as above indicated, renders the mastery of surveying an easy task. There is no calculation made or formula used by the working engineer which cannot be readily understood and performed by a skillful arithmetician after proper instruction. The hand-book of the engineer is accordingly supplemented with such special guidance as is found necessary for a full comprehension of the mathematical principles and their applications; and extended field practice is required in the use of the compass, level, transit and theodlite.

STUDIES SPECIAL TO WOMAN.

Besides the studies already indicated, attention is called to the following:

SPECIAL HYGIENE.

As shown in the course, one term is devoted to the study of Physiology, from the text-book of Dr. J. C. Dalton. This is followed in the fourth year by a course of lectures to young ladies by Mrs. Cripps on the subject of Hygiene, embracing such instruction in hygienic matters as are valuable to woman.

FARM ECONOMY considers those affairs of the farm which usually come under the supervision of the farmer's wife or daughter, and which are not included in "gardening" or "household economy;" such as butter and cheese-making, dairy management, etc. A course of lectures is delivered by the Professor of Practical Agriculture. See heading, "Farm Economy."

GARDENING is included in Practical Horticulture. See heading, "Landscape Gardening."

HOUSEHOLD CHEMISTRY. See heading, "Household Chemistry."

HOUSEHOLD ECONOMY

Follows Household Chemistry and consists of lectures by Mrs. Cripps in the art of house-keeping, embracing cookery, domestic management, and kindred topics. Many elderly gentlemen sufficiently know, and more young gentlemen will duly discover, that systematic knowledge of how cooking ought to be done is luminously different from the ability to do it. Instruction without practice can effect but little. Accordingly a kitchen laboratory has been completely furnished, and affords every facility for drill in the art of cooking. This drill chiefly differs from that of a kitchen in the respect that after a girl has learned to wash dishes or pare pototoes she is not kept everlastingly at either. After full trial we have found it just as feasible to give this practice, with profit and pleasure to the pupil, as it is to give laboratory practice in chemistry—and no more expensive.

THE INDUSTRIALIST

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THE INDUSTRIALIST.

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INDUSTRIAL EDUCATION.

Not the least of the things of which Kansas has a right to be proud is its magnificent educational system. At the start a wise and vigorous policy was adopted for the education of its youth; and ever since, whether in war or peace, poverty or plenty, the State has steadily developed and carefully fostered its various educational agencies. In addition to its munificent endowment of the public schools, it has provided higher institutions for three distinct kinds of instruction, namely, normal schools for the special training of public school teachers; a university for the education of those proposing to enter the professions of law, medicine or theology; and an agricultural college for the practical education of those who will engage in any of the "industrial professions or pursuits," as distinguished from the "learned professions." The relative demand for the three forms of education is indicated by the proportion in which the citizens of Kansas follow these vocations, as shown by the last United States census. Of every one hundred persons engaged in a vocation by which money is gained, the ratios were as follows:

Normal education:		
Teachers	1.13	1.13
Professional education:		
Ministers	0.43	
Lawyers	0.55	
Doctors	0.73	1.71
Industrial education:		
In agriculture	59.13	
In manufacturing and mechanical	14.63	
In personal service	13.89	
In trade and transportation	9.51	97.16
		100.00

AGRICULTURAL COLLEGE.

Recognizing the need for an education which should especially prepare the rising generations for an intelligent and successful practice of those vocations which are followed by ninety-seven out of each hundred of its citizens, the first institution endowed and put in operation by the State was its Agricultural College, so named because of the fact that agriculture is, both numerically and actually, the chief of these vocations. The title, "Agricultural" College, is apt to mislead those who are not familiar with the above fact, and also with the further fact that the acts of both Congress and of Kansas provide for an "industrial," as distinguished from a "professional" education.

ENDOWMENT.

The endowment received from the United States Government consisted of 81,601 acres of choice land, all of which had been sold at date of last report, except 31,461 acres now on the market. The proceeds from the sale of lands are invested in school bonds, and the securities in hand amounted to $238,101.28 by last report. The annual income from this endowment is about $20,000, out of which all expenses of instruction are paid. The only aid received from the State is for the erection of buildings, in accordance with the conditions of the congressional grant. This is the only one of the State's institutions which is not dependent upon the tax-payer for its maintenance.

LOCATION.

It is situated one mile from Manhattan, Riley county, one hundred and twenty miles west of the Missouri River, in the heart of the finest agricultural State in America. The Kansas Pacific Railway, with its connecting lines, gives speedy communication with every quarter.

COURSE OF STUDY.

The course of study is shaped with direct reference to giving an industrial as distinct from a professional education. It makes the pupil intelligent and expert in the use of the English language; in the use of numbers as employed by the farmer, book-keeper and engineer; and in the use of lines as employed by the carpenter, painter and architect. Words, figures and lines are tools which all men use. It then gives thorough instruction and laboratorial or field drill in the following sciences as essentially useful to an intelligent and successful farmer: Physiology, Practical Agriculture, Natural Philosophy, Botany, Entomology, Practical Horticulture, Landscape Gardening, Inorganic Chemistry, Organic and Analytical Chemistry, Surveying, Geology, Mineralogy, Zoology, Meteorology, Agricultural Chemistry, Political Economy, Practical Law and Logic. It has an equally practical and effective course for the education of woman as a woman, instead of as a man, and as a worker instead of as a butterfly. Then, it has a well-stocked farm and nursery, and well-equipped shops, for giving boys practice in farm and nursery work, and in wood and iron work, and for giving girls drill in dress-making, printing, telegraphy, carving, engraving and music.

[From the Topeka *Commonwealth.*]

A Hundred Thousand California Salmon Placed in Kansas Streams.

ELLSWORTH, Kansas, Dec. 8, 1878.

To the Editor of the Commonwealth:

It will no doubt be of interest to many of your readers to know that I have made a success in the planting of 100,000 California salmon in our streams. The spawn from which they were hatched was collected from the salmon of the McCloud River, California, by Hon. Livingston Stone, Deputy United States Fish Commissioner. They were shipped in a refrigerator car to Chicago, Ill., October 2d, and placed in hatching boxes October 12th at the fish hatchery, three miles northwest of Cedar Rapids. This is a private hatchery owned by B. F. Shaw & Co., where parties wishing to stock their ponds can be supplied with lake trout, salmon and other kinds of fish at prices much lower than eastern establishments.

The fish were taken from the boxes December 2d and placed in ten large cans, holding from fifteen to twenty gallons each, and making about 2,000 pounds of freight. I had some trouble in securing transportation for so large a bulk in the express trains, but to have taken freight trains, it would have been death to my fish and a failure to the enterprise; but through the courtesy of the officials of the B., C. & Northern Road, I received free transportation, with permission to occupy the baggage car from Cedar Rapids to Burlington.

I left Cedar Rapids on the 2:22 P. M. train, reaching Burlington at 7:30 P. M. At this place I had ten minutes to transfer. To get a permit from the Superintendent of the C., B. & Q., was the greatest difficulty, as the baggage car was packed full. Had it not been for the urgent plea made in behalf of the enterprise by Hon. B. F. Shaw, who accompanied me as far as Creston, I would have been compelled to take a slower train. Mr. Shaw's assistance and knowledge was very valuable to me. At Burlington we secured ice sufficient to last until I reached Atchison. It kept Mr. Shaw and myself busy to keep the water supplied with oxygen, which was done by changing the water, when it could be done, by the use of ice, and agitating the water. The weather was cool, which was in our favor. The fish carried splendidly, only losing a very few. I arrived in Atchison a few minutes after ten A. M., December 3d, where I was met by Col. A. A. Dean and Hon. A. B. Bradish, to whose care I turned over 30,000, to be distributed as follows:

Stranger Creek	2,500
Independence Creek	2,500
Delaware River, at Muscotah	1,000
Spring Creek, at Wetmore	1,000
Red Vermillion, Centralia	2,000
Black Vermillion, at Frankfort	2,000
Clear and South Forks, at Barrett's	1,000
Big Blue, at Blue Rapids	5,000
Little Blue, at Waterville	2,000
Republican, at Concordia	5,000
Solomon, at Beloit	5,000
Mill Creek, at Washington	1,000

I made the following deposits on the line of the A., T. & S. F. Railroad:

In the Delaware, at Valley Falls	2,000
In the Soldier, at Noth Topeka	1,000

On the line of the K. P. Railroad:

In Silver Lake, about	500
In the Vermillion, near Wamego	2,500
In the Big Blue, at Manhattan	5,000
In the Republican, at Junction City	3,000
In Chapman Creek	2,000
In the Solomon, near Solomon City	2,000
In the Saline, near Salina	3,000
In Spring Creek, at Brookville	1,000
In the Smoky Hill, at Ellsworth	5,000
In Big Creek, at Hayes	5,000
In Big Creek, at Ellis	5,000
I also distributed in the county of Ellsworth to individuals, to be placed in ponds, springs and creeks, for experimental purpose, about	1,000

Having previously arranged with Hon. E. A. Thompson, of Hutchinson, to meet me in Atchison, December 3d, to take charge and distribute along the line of the Atchison, Topeka & Santa Fe road, I was disappointed in not meeting him at his post; but a telegram from him, stating that he would be up on the first train, which was to meet our train in Topeka, was received. I telegraphed him to take charge of them at Topeka, and left the fish in charge of the conductor, with written instructions for Mr. Thompson to deposit

In the Wakarusa	2,000
In the Osage, at Redding	2,500
In the Neosho, at Emporia	5,000
In the Cottonwood, at Florence	2,000
In the Little Arkansas, at Halstead	2,500
In Lake View, McPherson county	2,000
In Lake Farland, McPherson county	2,000
In Cow Creek, at Hutchinson	2,000
In Walnut Creek, at Great Bend	3,000
In Pawnee Fork, at Larned	5,000

These fish were strong and healthy, and stood the trip much better than I expected. I must acknowledge the kind assistance rendered me by G. P. Dietz, Land Agent of the Atchison, Topeka & Santa Fe; the officials of the Central Branch, U. P. R. R.; the officials of the St. Jo & Denver; Hon. E. N. Morrill; the Superintendent of the A., T. & S. F.; the Superintendent of the K. P.; also, the conductors and baggagemen on all the roads; and especial mention should be made of Conductor George H. Jenkins, and Charles Gardner, of the K. P., for assistance rendered.

The railroads in all our States are doing much towards developing this important enterprise. The C., B. & Q. Railroad has fitted up a car for the use of the Fish Commissioner of Iowa in distributing the fish captured from the sloughs along the Mississippi river. Last year he caught and distributed 1,574,200 of the bark, yellow and striped bass, croppies, sunfish, wall-eyed pike, and other kinds, and placed them in the interior streams in the State. There can be no doubt but our native varieties will do well; the only trouble is the scarcity of them. The migratory fish, the shad and salmon, when turned loose, will remain in our streams until a year or eighteen months old, when they go to the sea, where they remain until four or five years old, or until they are matured, when they will return to the place of deposit or birth. The instinct of the migratory fish is the same as the instinct of the migratory birds. The fact is well established, by scientific investigation, that they will return if not prevented by impalpable obstructions. I am convinced that success will crown my efforts in stocking our streams with fish. Many of the States, Iowa, Wisconsin, Michigan, and all the Eastern States, are now realizing and reaping the benefits arising from fish culture. There is no reason why we cannot be benefited as well.

But I have written more than I intended, so I will stop. D. B. LONG.

Big Crops.

"You want to prove," put in the Deacon, "that we must drain our land and make more manure or buy artificials. I should agree with you if it was not for the cheap, rich land of the West. Freights are low, and it would seem pretty risky business to spend more money in draining ten acres of land than we can buy fifty acres for in the West; and then every year spend from ten to fifteen dollars an acre for artificial manure. Better 'go West, young man.'"

"No matter where you go," I replied, "you will find that this principle lies at the basis of profitable agriculture. You must get good crops—not only in favorable seasons, but in what we call unfavorable seasons. We must farm better. We recognize the principle in feeding cattle, sheep and swine. We do not, with these, trust to 'nature.' We provide food for them in winter, and see that all their wants are supplied at all times. We must do the same thing for our crops. I have a private letter from Prof. Shelton, of the Kansas Agricultural College, in which he says: 'Our crops of all kinds are wonderful—surpassing anything I have ever before seen. This afternoon I figured up the yield and cost of a small field of wheat. The yield was a fraction over 41 bushels per acre, and it cost, exclusive of taxes and interest on investment, 30 cents per bushel. Our corn promises equally well. I shall be disappointed if we do not get 1,800 bushels from 25 acres. But prices are very low: wheat 60 cents, corn 18 cents, and oats 15 cents per bushel, and hay only $2.50 to $3.00 per ton.'" "That crop of wheat in Kansas," said the Deacon, "sold for $24.60 per acre. Here it would have brought $43, to say nothing of the straw. The difference is over $19 per acre."

"But you must recollect," remarked Charley, who is somewhat inclined to go west, "that to raise 41 bushels of wheat per acre here, we must underdrain and have our land very clean and rich, and then not get such a crop one year in ten."

"We will not," said I, "discuss this question of whether farming is more profitable at the West than at the East; it depends a good deal on circumstances. No matter where you go, there is little money to be made in poor, ordinary farming. Prof. Shelton figures out a profit of *one hundred per cent* on his wheat crop. But how is it with the farmer who raises only twenty bushels per acre? Prof. Shelton's crop cost $12.30 an acre, and the *profit* is $12.30 an acre. If the crop of twenty bushels cost $10 per acre, the *profits* would be $2 per acre."

"Yes," added the Doctor, "judging from past experience, in a year or two we should have an unfavorable season, and wheat, instead of selling for sixty cents a bushel in Kansas, will bring $1.20. In such a year, Prof. Shelton may get only thirty bushels per acre, instead of forty-one bushels, and many others instead of getting twenty bushels will get only ten bushels. In this case, the *profits* from the ten-bushel crop will be $2.00 per acre, and from the thirty-bushel crop $24 per acre, or twelve times as much. —*Extract from "Talks on Farm Crops," by Joseph Harris, in American Agriculturist.*

ED P. HARRIS brought to our office last night, a bunch of twenty-six apples, on a stem less than twenty inches long. They are of the Rawles' Genet variety, and were grown on his farm in Douglas county.—*Topeka Commonwealth.*

ITALY is on the eve of making elementary agricultural instruction obligatory in all her common schools. The kingdom already boasts of two colleges, three special, and 18 farm schools. The State, the province, and the parish contribute in certain proportions to sustain these establishments.

WHAT can be done on a quarter-section of prairie land? Charles Smith, living three miles north of town, on the divide between Pipe and Lindsey Creeks, has raised this year from a 160-acre farm, 1,600 bushels of wheat, 400 bushels of oats, 1,000 bushels of corn, and 30 hogs. Mr. Smith is one of the most industrious men in the country, and has the good fortune to be blessed with a wife that is his peer in energy and industry. He is well fixed on his farm, and has a very nice stone house, large stable, granary 18x28, to which he is going to make a 12x18 addition. He has fruit and shade trees growing, keeps his buggy, and, altogether, furnishes an illustration of what our rich land will do in making a man rich.—*Minneapolis Independent.*

STUDY farming and make it a business.

THE INDUSTRIALIST.

SATURDAY, DECEMBER 21, 1878.

JNO. A. ANDERSON, Managing Editor.

ASSOCIATE EDITORS, MEMBERS OF THE FACULTY.

THE next term of the Agricultural College will begin Friday, January 3d, 1879.

It Has Been Fixed.

We understand that Gov. Anthony has more than one string to his bow. If he fails on the United States Senatorship, then he will be made President of the Agricultural College, through a regency of his own construction. We shall have more to say on the subject as the Senatorial struggle begins.—*Junction City Tribune.*

George T. made this arrangement some two months ago, and the *Tribune* has not the power to prevent its consummation. What are you going to do about it, *Mr. Tribune?—Leavenworth Times.*

There is not a particle of foundation in fact for the rumor that Gov. Anthony is a candidate, either present or prospective, for the presidency of this institution. We claim to know as much about the status of the presidency question as does any other person.

The several members of the present Board received their appointments one, two or three years ago; and six months ago there was no prospect whatever that any vacancy in the presidency would occur. These facts are a sufficient answer to the innuendo that Gov. Anthony has "constructed" a regency with reference to his own election as President.

Parliamentary Rules.

The efficiency of a member of the Legislature depends a good deal upon his familiarity with the rules governing that body. There are times when bills can be introduced, and when they cannot; when they can be amended, and when they cannot; when debate is in order, and out of order. And a knowledge of these and similar points gives its possessor a decided advantage over those not possessing it.

A good deal is said about the value of "experience," when the merits of new and old members are compared; but if the question is analyzed, it will be found that the chief difference lies in a knowledge or want of knowledge of the rules governing the transaction of business; because, outside of this knowledge, there is nothing in committee or other work which common sense and energy will not master.

To the new member the "rules," and especially those governing motions, appear to be a mass of arbitrary enactments, constructed without plan and resting upon no principles of justice or sense. He is never certain that if he makes a given motion, some one may not make another motion that will be put first and wedge his out of the fight. Nor is he certain as to the exact effect of specific motions, or what ones should be used for accomplishing a given purpose. To him they seem to be very much alike, and, when wielded by a shrewd opponent, to produce, at least in his own breast, a boiling feeling of cussedness toward all mankind in general and "Mr. Speaker" in particular. The rulings of the chair are apt to impress him as being the result of partiality far more than of law and decency, and it is only towards the close of the session that he inclines to a different opinion.

Now, the truth is that Mr. Speaker is as rigidly bound by the rules as is a judge on the bench by the statutes; and the difficulty of which the new member complains arises not from any lack of precise rules, but from a lack of knowledge on his own part as to what the rules precisely are. He is quite aware that a rip-saw is used by a carpenter for splitting a board, and a different saw for cutting it in pieces; also, that an auger produces a different effect from that of a plane; and he clearly sees that no little of the ability of a carpenter lies in his knowledge of just what tool to use for one operation and what one for the next.

Now, "motions" are as admirably designed for modifying, perfecting or killing a measure as are carpenter's tools for changing the shape and position of wood. And when a person clearly understands the object of a motion, its effect, what motions give way to it and to what ones it yields, on what motions it can be used, and what ones can be applied to it, he has placed himself on a level with any parliamentarian. A very little practice will make him the peer of any old member, so far as taking care of his own bills and blocking those he opposes are concerned; because this knowledge is exactly and only that which the old member has gained by experience. Much of it can be gained from books, because it is all in books.

The standard authorities on parliamentary law have been Jefferson's Manual, and Cushing's Manual, based on the practice of the U. S. House of Representatives. The student will find two difficulties in following them as teachers of parliamentary law. The first is that Congress is gradually changing its practice and therefore the standard — as in the case of the "previous question." The second is that the motions are not grouped and classified in such a way as to give the student a clear idea of the object, effect, and rank of each. They are rather manuals of reference for expert parliamentarians, than text-books for the instruction of those who desire to understand parliamentary usages.

A new manual has recently been published, based on Jefferson and Cushing, and corrected by the present practice of Congress, which every new member will find to be just the thing he needs. It is smaller than Jefferson's, but better; and can be obtained by mail on sending seventy-five cents to S. C. Griggs and Co., Publishers, Chicago, Ill., for "Robert's Rules of Order." Of course the Kansas Legislature has a few rules peculiar to itself, but the working tools of the parliamentarian are the same in all bodies; and there is no other book which can be compared to the above for the use of "new members" or of "old members" who desire to "brush up" their wits preparatory to the encounters of the approaching session.

Kansas State Horticultural Society.

The meeting at Ottawa was a very good one. Members, old and new, from many parts of the State, were present, and the citizens of that vicinity were also on hand. The reports of the past year's fruit crop showed a good crop of small fruits except grapes, which rotted badly in some places. But the peach crop was not extra and the apple crop very small. However, all seemed encouraged, and especially with the prospect for next year. The wood growth has been fine and is well ripened and supplied with fruit buds. The old hackneyed subjects of blight and pruning were passed with very few words.

Mr. J. W. Robson, of Dickinson county, read a very interesting paper on "The Variation of the Species." He explained the process of plant fertilization, and gave instances of chance seedlings that had, perhaps, been grown from seed crossed in the flower by some insect in gathering honey or bee-bread. If the dumb insects can improve the varieties, how much more the hand of a skillful man or woman. We may take any varieties of fruits we may choose that will cross-fertilize, and clipping out the stamens of one and dusting with the pollen of the other at the right time, having the bloom covered with gauze, and so produce seed which may partake of the good characters of both parents. The Society proposes to spend money in trying to so originate varieties for Kansas better than any we now have.

A new mode of preserving fresh fruits was shown. It is merely to cover with a solution of water and Salicilic acid. Small fruits are put in cold, and larger fruits, like peaches, heated. To every quart of fruit and water add four to seven and a half grains of Salicilic acid and cover only to prevent evaporation of water. The richest fruits need most acid. Samples were tasted that were as good as the best. It is no secret and no patent. Try it next year, or now, if you have apples or other fruit to put up. It keeps cider sweet. Dr. W. J. Newton, of Ottawa, saw it recommended by a German chemist and tried it this year and showed us his results.

The next meeting of the Society will probably be held in the Arkansas Valley next June.—*Prof. VanDeman.*

Students Enrolled Since Sept. 4, 1878.

NAME.	COUNTY.
Abbott, Ella	Riley.
Abbott, Frank	Riley.
Abbott, Harmen	Riley.
Adams, Emma L.	Riley.
Allen, Chester	Mitchell.
Anthony, Mollie	Cherokee.
Ashmead, George R.	Ellsworth.
Ayres, Sarah	Shawnee.
Barnes, E. M.	Osage.
Bates, Charles W.	Vermont.
Beacham, Augustine	Marshall.
Blain, Arthur T.	Riley.
Bowles, Louis C.	Johnson.
Breakbill, John	Riley.
Browning, Abbie L.	Riley.
Browning, Emma	Riley.
Buchli, Bartholomew	Wabaunsee.
Buell, Delight A.	Riley.
Burr, Elisha	Davis.
Butts, Halleck D.	Jefferson.
Campbell, Emma	Riley.
Campbell, Ettie A.	Riley.
Campbell, May	Riley.
Carter, John E.	Shawnee.
Chenoweth, Charles C.	Cherokee.
Clarke, Mary	Riley.
Coburn, Ella	Saline.
Coe, Henry F.	Missouri.
Coe, Jennie A.	Missouri.
Coleman, Edward P.	Iowa.
Cox, Lizzie R.	Riley.
Cripps, Edward V.	Riley.
Dickson, A. F.	Johnson.
Dickson, James B.	Johnson.
Donaldson, Alvin	Butler.
Donaldson, Flora	Butler.
Donaldson, George	Butler.
Dow, George H.	Riley.
Eckman, Wilmer K.	Osborne.
Edmiston, Dora	Illinois.
Emrick, Katie	Pennsylvania.
Everhart, Logan W.	Labette.
Farnsworth, Henry E.	Lincoln.
Finley, Charles A.	Jackson.
Flack, John B.	Dickinson.
Foreman, Albert M.	Riley.
Friend, Edward	Jefferson.
Glossop, Emma	Riley.
Goin, Edgar L.	New York.
Gordon, George A.	Jackson.
Gregg, Frank B.	Coffey.
Griffing, William J.	Riley.
Gross, W. E.	Saline.
Hatch, Linda	Republic.
Hicks, E. C.	Cherokee.
Hicks, Wm. G.	Cherokee.
Hillyer, William J.	Jefferson.
Himes, Hattie	Riley.
Hosmer, Mina	Riley.
Houston, Hortense	Riley.
Howden, George W. N.	Chautauqua.
Hulett, C. M.	Johnson.
Humphreys, George	Sumner.
Hunt, Henry L.	Cherokee.
Hutsell, Sallie	Cherokee.
Jacobs, James H.	Cherokee.
Jaquith, Walter W.	Davis.
Jeffrey, William J.	Riley.
Jeffrey, Fletcher	Riley.
Jewell, Fred	Butler.
Jones, Horace B.	Wabaunsee.
Kent, John H.	Riley.
Keyes, George C.	Wabaunsee.
Kingsbury, Eddie L.	Coffey.
Kinsey, Dora	Shawnee.
Knipe, George D.	Riley.
Knostman, Emma	Riley.
Leach, Darwin S.	Mitchell.
Lewis, Issie	Riley.
Lewis, Jno. W.	Riley.
Lewis, Samuel O.	Lyon.
Light, Willis	Neosho.
Limbocker, Clyde	Pottawatomie.
Limbocker, Clarence	Pottawatomie.
Luse, William P.	Missouri.
Lynch, Fred C.	Cherokee.
Lynch, James H.	Cherokee.
Mails, Mattie	Pottawatomie.
Mann, John	Rice.
McBratney, William	Nemaha.
McGuire, Katie I.	Johnson.
McNair, Alice E.	Wabaunsee.
McNair, J. L.	Wabaunsee.
McNair, S. E.	Wabaunsee.
Merrill, James	Shawnee.
Messenger, Charles	Cowley.
Miller, Edgar	Davis.
Millikan, Minnie E.	Johnson.
Mills, Hattie L.	Missouri.
Moore, Thomas R.	Smith.
Morgan, S. M.	Lyon.
Morrow, John N.	Johnson.
Myers, Wirt S.	Allen.
Neiman, Charles	Nemaha.
Neusbaum, Ada A.	Riley.
Neusbaum, Lincoln H.	Riley.
Noland, Manda	Riley.
Noyes, Amy E.	Wabaunsee.
Noyes, Ida L.	Wabaunsee.
Outt, J. F.	Montgomery.
Paine, Edwin C.	Lyon.
Parker, Grace	Riley.
Pettit, D. C.	Cherokee.
Pfoutz, William A.	Atchison.
Platt, Henry A.	Riley.
Randel, Alta	Nemaha.
Randel, Charles F.	Nemaha.
Randel, Henry A.	Nemaha.
Records, C. M.	Chautauqua.
Reed, C. J.	Pottawatomie.
Reed, Willie S.	Riley.
Reeve, Mark A.	Lyon.
Richards, Bettie	Pottawatomie.
Richardson, Noble A.	Wilson.
Rollings, W. E.	Ottawa.
Rose, George E.	Cherokee.
Rose, Wm. N.	Cherokee.
Rushmore, H. C.	Jefferson.
Rust, Charles	Atchison.
Salter, Lewis A.	Montgomery.
Scott, Nannie	Cherokee.
Shartell, Cassius M.	Chautauqua.
Sickels, Maria E.	Missouri.
Sigman, George L.	Chautauqua.
Sikes, Wm. H.	Pottawatomie.
Sloan, John A.	Clay.
Smith, B. B.	Dickinson.
Snow, Cora L.	Riley.
Southwick, Charles A.	Riley.
Spicer, Joseph C.	Lyon.
Spooner, Alice G.	Clay.
Stiles, Charles H.	Wabaunsee.
St. John, John	Johnson.
Stoner, Fannie A.	Atchison.
Strong, Grace R.	Riley.
Talbott, John R.	Atchison.
Tarrant, Will S.	Cowley.
Thomen, R. O.	Davis.
Thompson, George F.	Cowley.
Throckmorton, George	Coffey.
Travis, Jared M.	Wilson.
Tunison, Frank	Cherokee.
Vaught, Cora	Butler.
Vincent, Ella E.	Riley.
Wahl, Charles A.	Indiana.
Wahl, Fred E.	Indiana.
Wahl, Wm. H.	Indiana.
Ward, J. W.	Cherokee.
Welch, C. R.	Harvey.
Whaley, Rowena	Riley.
Whaley, Willie E.	Riley.
Whiteside, Wm. A.	Cherokee.
Williston, Frank H.	Riley.
Wilson, Elmer E.	Cherokee.
Wood, Clarence E.	Pottawatomie.
Woodburn, William	Nemaha.
Woods, Albert O.	Sumner.
Woodworth, J. W.	Cherokee.
Wright, Robert H.	Ford.
Wyland, T. J.	Jewell.

THE INDUSTRIALIST.

SATURDAY, DECEMBER 21, 1878.

The next term of the Agricultural College will begin Friday, January 3d, 1879.

Read the special notices in another column.

President Anderson and family went to Junction City yesterday evening.

We wish all the students, all our readers, and—everybody, a merry Christmas and a right happy New-Year.

Snow has fallen nearly every day this week, and this morning the "lovely snow-flakes" are coming down with all the ease and grace imaginable.

The library of the Webster Society will be open to all members who may desire books to read during vacation. The key is in the hands of W. K. Eckman.

The trains yesterday carried away a number of students to their several homes, where anxious hearts are awaiting their arrival. A happy vacation to them all!

Miss Emma Knostman was "surprised" by a party of students one night last week. She comprehended the situation, invited the party in, and entertained them right royally.

All applicants for information regarding the College should read carefully "Directions to Applicants." It answers numerous questions that are continually being asked.

We see by late papers that Gov. Anthony has filled the vacancy in the Board of Regents, occasioned by the resignation of L. J. Best, by the appointment of Mr. E. B. Purcell, of Manhattan.

The plasterers, carpenters and painters are putting the finishing touches on the new building. The cold weather has delayed the work some, so that the building will not be ready for use for several weeks.

Mr. John Mann will have charge of the College library during the vacation. It will be open on Tuesdays and Thursdays; and those who desire to return or take out books, will govern themselves accordingly.

Some new students have already arrived, and others have been here and made arrangements to attend, but have gone home to spend a few days with Mr. Christmas and Miss New-Year, some old friends whom they are expecting next week.

Every one seems satisfied with the work of the past term. The Professors speak highly of the progress which their respective classes have made, and the students all feel that they have obtained an equivalent for their time and money, in the shape of knowledge which can be used in every-day life.

Prof. Platt received a telegram to the effect that his son George, who is at Oberlin, Ohio, was sick with typhoid fever. Mrs. Platt started on Thursday. Recent telegrams show that he is dangerously ill, which will be sad news to his many friends. George graduated here last May and was universally beloved. We sincerely hope that he may recover.

We almost forgot to speak of the visit which Mr. Wm. Maltby, of Salina, made us this week. William was once a student of the College, and one of the soundest and steadiest young men we ever had here. He said he came down to attend the term examinations, which statement we somewhat doubted. We interviewed him in regard to some of the leading issues of the day, such as the Indian policy, Saline county railroad bonds, the matrimonial question, and found him non-committal on all of them, especially the last.

Messrs. Ayres and Kinsey, of Silver Lake, whose daughters are attending College, have done a very sensible thing lately. They had some difficulty at the beginning of last term in finding a suitable place for their daughters to live; and to avoid any such trouble hereafter, they have bought a lot just east of the College grounds and sent the material up from Silver Lake for a house. It is framed and all ready to put together, which will be done as soon as the weather moderates. As Mr. Kinsey is a lumber dealer and Mr. Ayres a carpenter, they can put up a house without a very great deal of expense. Parents who intend sending their boys and girls here for any length of time, can better afford to build a small house than to rent. After the Misses Kinsey and Ayres are through with their little mansion, it will rent readily, or will sell for very nearly what it cost. We trust this example may be imitated by others.

The Websters' final meeting of this term was held Saturday evening. The attendance at this meeting was larger than at any other during the term. Extemporaneous speaking was the principal exercise of the evening. This was carried through with earnestness, and was highly interesting to all hearers. Following this was a declamation, well rendered, by Mr. Todd. It was an extract from a speech on the Revolutionary War, by the Earl of Chatham. The *Reporter* was then presented by John Mann. All those who heard it will concur with us in saying that our anticipation, as mentioned in the last report, was fully realized. While under the order of unfinished business, a sled load of young people came in upon us, consisting of three couples.

The meeting was one of much interest; and we venture that not one of the members who has attended this Society during the past term, feels that he has not gained something thereby. Truly the Webster Society closed this term's career well, and we hope to make a good start next term. M.

THE SOCIAL.

A joint session of the two literary societies, followed by a social, was held in the College Chapel last Thursday evening. Some of the members of the Faculty were present with their wives, and some were present without them. All the students and many visitors came out, and evidently enjoyed themselves. The session lasted an hour and a half, and consisted of a paper from each Society, a declamation—or rather a medley of five declamations—entitled "Hash," music by the Manhattan band, two quartettes, and a farewell address.

The social, of course, was the more enjoyable part of the evening's exercises. Nearly all remained and indulged in a variety of games, conversations, and story tellings. Those who did not so indulge, looked on and took their fun out in laughing. The refreshments were next served, and we trust satisfactorily. The socialists dissipated until about eleven o'clock, when suddenly the building was left to darkness and the janitor—Mr. Hunting.

The committee desires here to extend its most hearty thanks to all who contributed in any way to make the evening pass off so pleasantly. The separation of the students was attended with a hearty good cheer, and a feeling of genuine good-will was manifested by them. May they so meet next term. MERCURIUS.

SPECIAL NOTICES.

Knostman, the clothier, handles all kinds of ready-made clothing. He keeps the latest styles in hats and caps, and deals in every variety of gents' furnishing goods. Call in, opposite the post-office, and purchase your holiday outfit.

You can find all kinds of holiday goods at Fox's Book Store. Gold Pens, Fine Gift Books, Albums, Cut Glass Goods, Juvenile and Toy Books, Autograph Albums, Pocket-Books, Stereoscopes and Views, Writing Desks, Work Boxes, Bibles, Papeteries in great variety, Building Blocks, Games, Vases, etc., etc.

READ AND HEED.—Below you will find prices very low, as holidays are close at hand. Remember them, as we cannot print them but once:

Choice Coffee, 20 cents per pound.
White Sugar, 10 cents per pound.
Brown Sugar, 9 cents per pound.
Dried Apples and Peaches, 7 cents per pound.
Dried Currants and Prunes, 10 cents per pound.
Raisins, 15 cents per pound.
Nuts, 12½ to 30 cents per pound.
Candies, 20 to 40 cents per pound.
Apples, $1.25 to $1.40 a bushel.
Michigan Apples, 3 bushels to a barrel, $3.50.

Larger stock of candies than ever before; any style or kind. Fresh oysters, 40 to 50 cents per can. BLOOD & BROOKS.

ENTERPRISE ITEMS.

Our ice men are beginning their frosty harvest. Ice is about six inches thick.

Samuel Carey, of Ohio, will lecture on finance, in this city, sometime during the winter.

Tuesday night is reported as the coldest of the season—six to ten degrees below zero, according to authority.

J. K. Winchip has purchased a new horse which can trot in about 2:30. He is under the guardianship of John Drew.

An enterprising Granger brought in a deer last Wednesday, portions of which he sold to different parties. This species of game is getting rare in this section.

There has been good sleighing for a week past, and, from present appearances, will be good for several days to come. This is more sleighing than has been seen in this country for a number of years.

Our public schools, under the direction of Prof. Lantz, assisted by an efficient and intelligent corps of teachers, are in a very flourishing condition. There are seven departments in all, and a larger attendance of pupils than ever before. The new $12,000 school building is fitted up with all the modern appliances for assisting the student in the pursuit of health, comfort and an education. This school, together with the Agricultural College, located here, makes Manhattan one of the very best educational points in the West. One of the great difficulties the emigrant has to encounter in his search for a home in the West, is to find a point where cheap lands and a good school for his growing family are within a reasonable distance of each other. Both these advantages are found in this part of the State, and the large number of intelligent people who have settled in our midst the past twelve months is proof that this important item is being discovered and appreciated.

NATIONALIST ITEMS.

John House has added a general family grocery stock to his flour and feed depot, and things around there look as neat as a pin.

There is a new, elegant pulpit bible at the Methodist Church, lately purchased by the ladies with the assistance of a few gentlemen.

Every sleigh in this community must have been in use last Saturday afternoon. The snow was in excellent condition, and all who could procure a sleigh were out.

The militia are invited to Topeka to attend the inauguration on the 12th of January. They are now talking up suits, etc. The boys are bound to go a "sogering."

The Manhattan Institute has engaged Burdette, the Burlington *Hawkeye* man, to deliver a lecture, about the 10th of February. We will give a more extended notice hereafter.

With the number of hogs now raised in Riley and Pottawatomie counties, a pork-packing establishment would pay well in Manhattan, and ought to be built before another season.

J. B. Wadleigh and George Brown have swapped lumber yards. Wadleigh intends putting in a large stock of furniture in connection with the lumber business at his new quarters.

The friends of Prof. Platt and wife will regret to hear that a telegram was received Wednesday morning from Prof. Kedzie, at Oberlin, that their son George was quite sick with the typhoid fever. Another telegram came Wednesday evening requesting Mrs. Platt to come immediately. She started Thursday morning. It is hoped she may find the circumstances more hopeful than the Professor in his anxiety thought them to be.

Miss Amanda Way, a noted temperance lecturer, who is making a tour West, has promised to stop off at Manhattan on Friday, and will probably remain till the first of next week. Arrangements are being made for her to deliver two or three lectures at one of the churches while here. We have heard Miss Way a number of times, and she always delivered an earnest, enthusiastic, and forcible lecture. All should go out and hear her. If you don't, you will miss a good treat.

DIRECTIONS TO APPLICANTS.

TERMS OF ADMISSION.

Candidates for admission must be fourteen years of age, and pass a satisfactory examination in reading; arithmetic, through decimal fractions; and English grammar, to syntax. Classes are started at the beginning of each year in Drill in Arithmetic and Drill in English; and the pupil must have the knowledge above indicated, else he will be unable to retain position if admitted.

Pupils will be received at any time during the year, if able to pass an additional examination upon the subjects studied by the classes which they expect to enter. But they will find it greatly to their advantage to be present at the opening of each term, or as soon thereafter as posssble.

GRADES.

Both the Literary and Industrial recitations are graded daily upon a scale of 100; and an examination of all classes is made at the close of each month. A student not attaining an average grade of sixty is promptly dropped to a lower class, or excluded from the Institution until able to do so. The work of grading is strict and uniform in all the departments, and this process is rigorously used for sifting out incompetent and indolent pupils; thus more than accomplishing all that is designed to be effected by a "high standard of admission." Hence, the student's continuance in the College wholly depends upon his own action.

The course is based upon the determination to make the labor required in the preparation of one industrial and three literary recitations as much as the average student can perfectly perform, in ten hours a day. We design to give the pupil the worth of the time expended at College; and, in order thereto, he must do a full day's work with brain or hand. Only those students who can maintain a standing of ninety in each study will be allowed to take more than the prescribed number of recitations; and no one will be permitted to have less than one industrial and three literary recitations.

RELIGIOUS.

Unless otherwise directed by parents, students are required to attend chapel at 8:30 A. M. on academic days, and divine service once every Sabbath.

EXPENSES.

There are no charges whatever for enrollment, attendance or instruction in the regular courses; nor are there any "contingent fees" for the repair of buildings, for the use of books or apparatus, for diplomas, or the kindred privileges usually grouped under the term "contingent." Male students are furnished instruction, the use of apparatus, instruments or tools, in both the literary and industrial classes marked out for them, without any charge. And the same is true of female students in the regular classes provided for them. Printing and Telegraphy are industrials primarily provided for the education of female students, and male students taking either of these are charged $1 per month for use of instruments.

Instrumental music is a fine art or "accomplishment," rather than a mechanical art. We do not place it among our "industrials" in the same sense, or for the same purpose, that we do those provided for teaching the trades. Accordingly, a fee of $12 per term, or seventy-five cents per week is required from female students for tuition and the use of pianos or organs.

The only charge made for material in either the literary or industrial departments is for the chemicals used by students in laboratory practice, which are furnished at wholesale prices, and amount to but a small sum.

Furnishing an absolutely free education is as much as can be reasonably asked; and the Institution neither boards, clothes, nor supplies the student with text-books. Boarding can be obtained in private families at from $2.75 to $4 per week. Washing costs from seventy-five cents to one dollar per dozen. Text-books, which can be procured in Manhattan, cost from $2 to $5 per term.

No student need expend over $5 per week; and many of our best pupils are living at $1.25 per week. Students desiring to "board themselves" can do so at from $1 to $2 per week. In a club of four young men, renting a house, the average cost to each for the term was $1.11 per week.

LABOR.

Manual labor by the students may be for either of two purposes: First, to acquire skill in a given art; second, to earn money. In the first case, the labor is educational; in the second, it should be paid for by the party benefited.

Educational Labor.—Manual labor in the reciations of the Industrial Departments, like mental labor in those of the Literary Departments, is purely educational and will not be remunerated. While the interest of the student will be held paramount in the direction of this labor, the practice necessary to dexterity will be required.

Remunerated Labor.—When the Institution needs labor on the Farm or elsewhere which is not educational, but simply for its own profit, and which a student is able and willing to perform, it becomes an employer instead of a teacher, and he an employe instead of a scholar. It pays for work, he works for pay. The relation between them is commercial, not educational; and both parties must act upon business principles. Hence, the College furnishes only such employment as its own interests require, and will pay according to the value of the service rendered at from seven to ten cents an hour.

AMOUNT EARNED.

It is impossible to predict how much a given person can earn, since that depends upon what he can do and what work there is to be done. Hence, it is wholly impossible for us to answer the question so often asked: "Do you think I can meet my expenses by work?" Some students make one-half their expenses, some the whole, and exceptional men have made more than expenses. As a rule, a faithful boy skilled in farm work can earn half his expenses on the Farm or in the Nursery. During the year he can ordinarily acquire sufficient skill in the wood or iron shops to enable him to make articles for sale. The whole question is one for his own consideration and decision. We can teach all who come, but cannot absolutely *promise* anything more. Hitherto we have refrained from holding out strong inducements respecting the amount of labor we might have to offer; but in view of the fact that during each of the last three years we have had more to do than the students could perform, we are inclined to give greater and positive encouragement on this point. Any boy who is in dead earnest, who is familiar with farm operations, and who can raise $50 to start with, should be able to carry himself through the four years' course. And certainly this places an education within the reach of every determined boy. As yet we are unable to offer similar advantages to girls, not requiring labor in the College departments which they can perform.

RULES.

1. Behave as a true man or woman should, at all times and in all places.

2. Attend to your own business promptly, thoroughly and courteously; and vigorously let alone that of other people.

3. Penalty: "Leave!"

PUBLICATIONS.

The "Hand-Book," published in 1874, containing a full discussion of the educational question and the aims of the Institution, will be forwarded to any one desiring it.

THE INDUSTRIALIST, a weekly journal edited by the Faculty and published by the Printing Department, contains original and seasonable articles on the Farm, Orchard, Trades, Sciences, and Education. Price, 75 cents a year. Address A. A. Stewart, Manhattan.

CALENDAR.

Winter Term 1879.—Begins Friday, January 3d, 1879.

TO NEW STUDENTS.

Bring the text-books you have been using. On arrival, first arrange for your boarding. A. A. Stewart, Sup't Printing Department, will furnish information, either by letter or on application, concerning boarding places or rooms for rent. Report to the President at 8:30 A. M., immediately after chapel, for enrollment.

For further information apply to Jno. A. Anderson, President, Manhattan, Kansas.

KANSAS STATE AGRICULTURAL COLLEGE.

FACULTY.

J. A. ANDERSON, *President, Prof. Political Economy.*
M. L. WARD, *Prof. Mathematics and English.*
G. H. FAILYER, *Prof. Chemistry and Physics.*
E. M. SHELTON, *Prof. Prac. Agricul., Sup't Farm.*
H. E. VAN DEMAN, *Prof. Botany and Horticulture.*
J. E. PLATT, *Prof. Elem'y English, Mathematics.*
JNO. D. WALTERS, *Teacher Industrial Drawing.*
HON. D. J. BREWER, *Lecturer on Practical Law.*
T. T. HAWKES, *Sup't Mechanical Department.*
A. A. STEWART, *Sup't Printing Department.*
W. C. STEWART, *Sup't Telegraph Department.*
MRS. M. E. CRIPPS, *Sup't Sewing Department.*
W. L. HOFER, *Teacher of Instrumental Music.*

INDUSTRIAL EDUCATION.

The real value of an education to the student depends upon two things: First, the practical worth of the knowledge taught; and, second, the degree in which he makes it his own. Hence, the ability of any institution to give a practical education depends upon the kind and aim of the knowledge it teaches, and upon the thoroughness of the instruction therein. The State Agricultural College was directly endowed by Congress, and is guided by the State, for the specific purpose of furnishing to the industrial classes of Kansas a "practical" education, that is, "one fit for use." As its name indicates, and as the statistics of the industries of the State require, its chief work must be that of giving a useful and usable education to those who will engage in farming; and, therefore, the Farmer's Course must, from the nature of the case, be its main one.

FARMER'S EDUCATION.

Words and figures are merely instruments with which to record ideas. They are not themselves ideas, nor should they be made the chief end of an education. As a wagon is necessary to haul grain, so are they a necessary part of an education; but as the wagon is not the grain, so they are not the knowledge which the farmer converts into money. Hence, the classics and higher mathematics are not taught. But it will be noticed in the following course that so soon as the pupil acquires working skill in the use of the English language as a tool, and of figures and lines as mathematical tools, those arts and sciences which present knowledge that has a cash value to the farmer are taught as rapidly as their importance and thorough acquisition will permit. Studies numbered (1) and (4) in the second, third and fourth years are the spine of the course, to which the others are as ribs and muscle.

FARMER'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
6. Logic.	1. Practical Agriculture (advanced.)	6. Practical Surveying.	1. Botany, Entomology.	6. Industrial Drawing.	1. Physiology.	6. U.S. History, Industrial Drawing.	1. Drill in English.
	2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.
	3. Polit. Economy, Practical Law.		3. Practical Geometry.		3. Algebra.		3. Industrial Drawing.
	4. Zoology.		4. Horticul., Landscape Gardening.		4. Practical Agricul. (elementary).		4. English Structure.
	5. Agricul. Chemistry, Meteorology.		5. Organic, Analytical Chemistry.		5. Physics.		5. Adv'd Arithmetic, Book-keeping.

WOMAN'S EDUCATION.

Nearly one-half of our students are females, and the Woman's Course is prepared expressly for their liberal and practical education. We have no doubt whatever that practical men and women, who understand what it means and what it seeks to do, will fully endorse it.

WOMAN'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
6. Logic.	1. Farm Economy, Special Hygiene.	6. Household Economy.	1. Botany, Entomology.	6. Industrial Drawing.	1. Physiology.	6. U.S. History, Industrial Drawing.	1. Drill in English.
	2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.
	3. Polit'l Economy, Practical Law.		3. Industrial Drawing.		3. Algebra.		3. Industrial Drawing.
	4. Zoology.		4. Horticul., Landscape Gardening.		4. English Literature.		4. English Structure.
	5. Phys'c'l Geography, Meteorology.		5. Organic, Household Chemistry.		5. Physics.		5. Adv'd Arith., Book-keeping.

MECHANIC'S EDUCATION.

Because of the adaptedness of the leading course to the wants of the intelligent mechanic, it has been found practically unnecessary to diverge from the Farmer's Course. Additional studies, specially adapted to the mechanic's use, will be furnished in a Post-Graduate's Course.

If it be urged that the distinctively agricultural knowledge taught in the Farmer's Course is not directly valuable to the mechanic, we reply that, admitting the point for the purpose of argument, yet: 1. This knowledge is of more practical value to the mechanic than is the Latin, Greek, or a half dozen other things embraced in the usual course preparatory to the professions; 2. That the great majority of Kansas mechanics will also be more or less engaged in agriculture; 3. That those studies in the course which are directly valuable to the mechanic, together with the shop facilities, offer a better mechanic's education than can be elsewhere found west of the Alleghanies.

INDUSTRIAL DEPARTMENTS.

Having knowledge in the head is one thing; ability to use it with the tongue, fingers or feet is quite another thing. Both are vital to success in practical life. A man might thoroughly understand the theoretical principles of carpentry, and yet, not having used the tools, be wholly unable to earn carpenter's wages. So in all other vocations. Accordingly, instruction is given in the following well-equipped Industrial Departments, and every student is required to recite in some one of them, as selected by the pupil or parent:

FOR MALE STUDENTS.	FOR FEMALE STUDENTS.
The Farm.	Dress-making.
The Nursery.	Printing.
Carpentry.	Telegraphy.
Cabinet-making.	Scroll-sawing.
Turning.	Carving.
Wagon-making.	Engraving.
Painting.	Photography.
Blacksmithing.	Instrumental Music.

Each of these departments is conducted exactly as in daily life, and aims to give precisely the drill received by an apprentice. No charge is made, either for tuition or material, from male students taking the Industrials provided for them; nor from female students taking the ones provided for them, except in the Department of Instrumental Music. Male students taking either Printing or Telegraphy are charged $1 per month for the use of material and instruments.

DEPARTMENTS OF INSTRUCTION.

DEPARTMENT OF AGRICULTURE.

PRACTICAL AGRICULTURE.

Second Year:—General principles of breeding; history and characteristics of breeds; adaptation of different breeds for special purposes and localities; implements of simple tillage; mechanical principles involved in their construction; act on of the plow upon soil and subsoil; principles of draught; influence of different adjustments upon draught; use of the dynamometer; value of hoed crops in a system of husbandry; the cultivation of corn and roots; soils that need drainage; how to lay out a system of drains; house drainage; sewerage.

Fourth Year: General view of agriculture, ancient and modern; agricultural progress of the last century; relative advantages of mixed husbandry and special farming; the selection and arrangement of the farm with reference to the system to be pursued; rotation of crops; general advantages of a rotation; the best rotation with reference to disposition of labor, production of manure, and extermination of weeds; pasturage and production of grain and forage crops; manures, how best housed and applied; composting manures; commercial fertilizers; systems of feeding; stall feeding; steaming food; soiling; experiments in feeding; farm buildings; farmhouses; barns.

FARM ECONOMY.

Woman's Course, Fourth Year: Dairy products as human food; influences affecting character of milk; manufacture of condensed milk; the factory system and household plan of cheese-making; treatment of rennet; general process of cheese manufacture; subsequent treatment of cheese; butter-making; creameries; "deep" and "shallow" setting systems; general process of butter-making; packing and preserving butter.

DEPARTMENT OF BOTANY AND PRACTICAL HORTICULTURE.

This department embraces a course of instruction in the elements of botany, structural and systematic, with a constant attention to the practical application of botany to the farm, orchard, garden, nursery and forest; also a course of lectures on Landscape Gardening. The instruction is mainly given by lectures, accompanied by regular practical drill in all the work of the fruit, vegetable and flower gardens, nursery, orchard, vineyard and ornamental grounds.

The lectures in Practical Horticulture embrace the following and kindred subjects: The relation of atmospheric motion, moisture and temperature to horticulture; seeds, the means of collecting and preserving; propagation, by seeds, cuttings, layers, suckers, grafting, budding; care of young plants; improvement of varieties; management of commercial and farm nursery; modes of pruning; the orchard; fruit suitable for orchard and garden culture; the flower, vegetable and fruit garden; importance and mode of forest culture; shelter belts and their influence; weeds and useful plants; noting the species of trees worthy of culture, either for profit or ornament.

LANDSCAPE GARDENING.

The lectures on Landscape Gardening not only unfold the accepted principles of the art, but at the same time give special attention to such applications of the art as may be made universally available in laying out and improvement of farms and the homes of the people. These lectures are accompanied by a practical drill in in the work of laying out and plotting grounds topographically.

CHEMICAL DEPARTMENT.

PHYSICS.

This includes a full consideration of the laws of mechanics, of liquids, gases and vapors, weights and measures, and specific gravity, followed by experimental study in the Physical Laboratory of the laws of heat, light, with spectrum analysis, electricity and magnetism, and the relation of these forces to plant and animal life. Text-book, Ganot.

INORGANIC CHEMISTRY.

This course is opened with a careful study of chemical forces and the laws governing chemical combination. The elements, with their compounds, are next considered in succession as to their history, properties, manufacture, and especially with regard to their uses on the farm and in the arts. These lectures are accompanied by an extended course of laboratory practice in which each student performs every experiment with his own hands. Text-book, Eliot & Storer.

ORGANIC CHEMISTRY.

This comprises a thorough study of the chemistry of the organic compounds, the composition of plants and of the various compounds derived from them. Constantly accompanied by laboratory practice.

CHEMICAL ANALYSIS.

In this course each student is furnished his stand in the Qualitative Laboratory, completely furnished with apparatus and chemicals for his own use. He here performs analyses of farm soils, plant ash, commercial manures, ores, mineral waters, commercial compounds, etc. After completing this course, he enters, if he desires, the Quantitative Laboratory, where he pursues a full course in quantitative analysis. Text-book, Kedzie's Manual.

AGRICULTURAL CHEMISTRY.

This includes a thorough consideration of the application of chemical principles to the economy of the farm; the origin and formation of soils; the classification and composition of soils; the analysis of soils and their adaptation to purposes of production; the composition and use of manures; composting; chemistry of farm operations, such as plowing, fallowing, draining, etc. Text-book, Johnson's "How Crops Feed."

METEOROLOGY.

Embracing the composition of the atmosphere; atmospheric pressure; temperature and humidity; laws of storms; rain, snow and atmospheric electricity. A full course in meteorological observations is taken under direction of the Signal Service. Text-book, Loomis' Meteorology.

MINERALOGY.

This includes the study of the laws of crystallography, with the properties, forms and uses of the principal minerals of the United States. Blowpipe analysis forms a very important part of the course, each student being required to name and identify a large series of minerals. Text-book, Dana's Mineralogy.

HOUSEHOLD CHEMISTRY.

A course of lectures on this subject is yearly delivered to a class of young ladies. The course embraces the chemistry of cooking; the composition of food; bread; tea, chocolate and coffee; butter and milk; ripening and preservation of fruits, etc.

SPECIAL COURSES

Are constantly in progress in Assaying, Pharmaceutical Chemistry and Photography.

ENGLISH LANGUAGE.

Words are simply tools used to express ideas; and, since the vast majority of our communications are made by the employment of spoken or written words, skill in using them is as profitable to the industrialist as dexterity with the needle is profitable to the seamstress. The direct aim of the course is to make the student skillful and intelligent in handling the machinery called language, just as an engineer handles a locomotive; and no drill will be omitted, or effort spared, to gain this end. Apart from the course itself, which is far more practical and complete than that usually found in literary colleges, the constant attention given this subject by all the departments, and especially the practice required in the printing classes, affords superior advantages to the student.

DRILL IN ENGLISH.

"As grammar was made after language, so ought it to be taught after language."—*Herbert Spencer.*

Drill in English embraces the following topics:

Sounds of the language; drill in producing the vocal, sub-vocal and aspirate elements with accuracy, distinctness and volume; vowels, consonants.

Letters: Form; power; rules for spelling, drill.

Words: Signification, properties, modifications, variations, relation and dependence.

Sentences: Drill in statement of ideas; description, clearness, terseness, vigor; business letters, discussion; capitalization; syllabication; punctuation; construction and analysis of sentences; elements, uses and names; criticism of compositions printed as written; proof reading; grammatical construction; superfluous words and clauses; drill in reading, speaking and penmanship.

Text-books: Webster's Academic Dictionary; Lee & Hadley's Advanced Lessons in Language.

Pupils deficient in spelling, etc., should enter the printing class, the printing-office being the work-shop of language.

STRUCTURE OF ENGLISH.

ELEMENTS OF WORDS.—The end aimed at in this study is to learn everything about words which will aid in their effective use. Among the topics included are:

Roots: What are they; their origin; their force and value as an element of language; the manner of their growth into different parts of speech.

Stems: Their derivation; their offices and properties; their relation to other parts of words.

Prefixes and Suffixes: The several sources whence derived; the relation of their force or significance to those sources; explanation of the laws and principles governing their use along with stems.

Compounds: Their value; their properties and uses; the laws governing their formation.

Synonyms: Definitions; causes of their abundance in English; the principles to be observed in choosing among them, to express a thought.

Criticism: This constitutes a prominent part of the exercises of the pupil through his whole course in the study of English. It not only diversifies and enlivens the class-room exercise, but reduces to practice the principles of the structure of the language. By this means, the student acquires not only a knowledge of English, but readiness and accuracy in speaking or writing it. The exercises in criticism embrace not only examination of selected matter, but original composition.

ELEMENTS OF SENTENCES.—The purpose in view in studying this subject is not to traverse the ground gone over in the study of grammar, but to fix in the mind of the student a clear understanding and remembrance of names, the properties and offices of the several classes of words entering into an English sentence, by showing him the reason of things; to make more simple, as well as interesting and practically useful, a study otherwise "dry and unprofitable" in many cases, by explaining the reason of the verbal forms and changes, the rules and maxims he is to remember and observe in his use of language. In the same manner he is conducted through a study of the mutual relations and dependencies of the several elements making up a sentence.

MATHEMATICAL DEPARTMENT.

Figures and lines, like words, are only instruments with which to convey ideas, or perform operations that cannot be easily done without them. The arithmetical principles used in business are few and simple; but accuracy and rapidity in computation are only gained by practice. College graduates often fail to retain clerkships, not because they do not know *why* given operations are performed, but because they can neither add, multiply or divide with that habitual correctness which renders their work reliable.

DRILL IN ARITHMETIC.

The chief design of this study is to make the student expert in the use of numbers, as employed by the industrialist for profit. The occupation of a successful farmer demands the application of every principle of practical arithmetic, and is taken as a starting point, rather than that of an abstract system. Beginning with a simple cash account, book-keeping is gradually developed to the full extent of its real utility. The areas of fields, expense of crops, construction of houses, sales of produce, and investment of capital, involve all the fundamental operations, and those of profit and loss, commission, taxes, insurance, exchange and stocks. Following this line, the student, so far from hammering away at "pure" science draws from the mathematical store-house what he needs, and sees why he needs it. Accuracy of calculation and posting, rather than a *mere* comprehension of the principles, is aimed at. Besides the recitation-room drill in business forms, practice in the field is also given. Estimating the number of cords in a pile of wood said to be 100x4x4 feet is one thing; measuring a pile of wood through which any number of cats may be harmlessly thrown, and in which four-feet sticks are the exception, is quite another and more difficult thing.

ARITHMETIC AND BOOK-KEEPING

Is a continuation of the above, having the same purpose and adopting such methods as the necessities of the class indicate. Thorough instruction in the principles and forms of business law is given. It will be seen that this method of teaching book-keeping, besides ensuring arithmetical practice, develops practical skill in that important art.

ALGEBRA.

Algebra is included in the course as a preparation for the study of Surveying.

DRAWING.

The practical value of Industrial Drawing can hardly be overestimated, first, because its study is the best drill for the development of the perceptive faculties, which are the ones most employed in daily life; and, second, because the working classes make a far greater use of lines than they do of figures. A farmer follows a line when laying a straight furrow; the carpenter uses the square and rule twenty times as often as he does figures; and a woman in cutting a pattern, or deciding that one bonnet is prettier than another, does so by the line or "form." So that either in its direct application, or in the exercise of that taste which comes from skill in using lines, this branch of mathematics is quite as important as a means of "mental discipline" as is the branch of computation, and is of far greater daily use. The admiral system of Prof. Walter Smith, Art Director of Massachusetts, is thoroughly followed through the grades of Free-hand, Geometrical, Object, Model, Perspective, Mechanical and Topographical Drawing, during the terms indicated by the Course of Study. In addition, constant practice in the application of lines to metal and wood is furnished in the Blacksmith, Carpenter, Turning, Scroll-sawing, Carving, Engraving and Printing shops, and to fabrics in the Sewing Department.

PRACTICAL GEOMETRY.

Not one farmer in a thousand ever uses the transit in surveying his land, the testimony of the county surveyor being decisive in court; but every farmer makes countless applications of lines and angles in laying off fields, roads, gardens, planning houses, determining levels, etc. The object of Practical Geometry is to teach the properties and uses of angles, and to make the student skillful in the application of lines to the field by the use of such simple instruments as are always within reach, or within his ability to construct; and accurate in the transferring of plans to the grounds, board or block.

PRACTICAL SURVEYING.

The drill in the use of figures and lines given by the mathematical course as above indicated, renders the mastery of surveying an easy task. There is no calculation made or formula used by the working engineer which cannot be readily understood and performed by a skillful arithmetician after proper instruction. The hand-book of the engineer is accordingly supplemented with such special guidance as is found necessary for a full comprehension of the mathematical principles and their applications; and extended field practice is required in the use of the compass, level, transit and theodlite.

STUDIES SPECIAL TO WOMAN.

Besides the studies already indicated, attention is called to the following:

SPECIAL HYGIENE.

As shown in the course, one term is devoted to the study of Physiology, from the text-book of Dr. J. C. Dalton. This is followed in the fourth year by a course of lectures to young ladies by Mrs. Cripps on the subject of Hygiene, embracing such instruction in hygienic matters as are valuable to woman.

FARM ECONOMY considers those affairs of the farm which usually come under the supervision of the farmer's wife or daughter, and which are not included in "gardening" or "household economy;" such as butter and cheese-making, dairy management, etc. A course of lectures is delivered by the Professor of Practical Agriculture. See heading, "Farm Economy."

GARDENING is included in Practical Horticulture. See heading, "Landscape Gardening."

HOUSEHOLD CHEMISTRY. See heading, "Household Chemistry."

HOUSEHOLD ECONOMY

Follows Household Chemistry and consists of lectures by Mrs. Cripps in the art of house-keeping, embracing cookery, domestic management, and kindred topics. Many elderly gentlemen sufficiently know, and more young gentlemen will duly discover, that systematic knowledge of how cooking ought to be done is luminously different from the ability to do it. Instruction without practice can effect but little. Accordingly a kitchen laboratory has been completely furnished, and affords every facility for drill in the art of cooking. This drill chiefly differs from that of a kitchen in the respect that after a girl has learned to wash dishes or pare pototoes she is not kept everlastingly at either. After full trial we have found it just as feasible to give this practice, with profit and pleasure to the pupil, as it is to give laboratory practice in chemistry—and no more expensive.

THE INDUSTRIALIST

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THE INDUSTRIALIST.

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INDUSTRIAL EDUCATION.

Not the least of the things of which Kansas has a right to be proud is its magnificent educational system. At the start a wise and vigorous policy was adopted for the education of its youth; and ever since, whether in war or peace, poverty or plenty, the State has steadily developed and carefully fostered its various educational agencies. In addition to its munificent endowment of the public schools, it has provided higher institutions for three distinct kinds of instruction, namely, normal schools for the special training of public school teachers; a university for the education of those proposing to enter the professions of law, medicine or theology; and an agricultural college for the practical education of those who will engage in any of the "industrial professions or pursuits," as distinguished from the "learned professions." The relative demand for the three forms of education is indicated by the proportion in which the citizens of Kansas follow these vocations, as shown by the last United States census. Of every one hundred persons engaged in a vocation by which money is gained, the ratios were as follows:

Normal education:		
Teachers	1.13	1.13
Professional education:		
Ministers	0.43	
Lawyers	0.55	
Doctors	0.73	1.71
Industrial education:		
In agriculture	59.13	
In manufacturing and mechanical	14.63	
In personal service	13.89	
In trade and transportation	9.51	97.16
		100.00

AGRICULTURAL COLLEGE.

Recognizing the need for an education which should especially prepare the rising generations for an intelligent and successful practice of those vocations which are followed by ninety-seven out of each hundred of its citizens, the first institution endowed and put in operation by the State was its Agricultural College, so named because of the fact that agriculture is, both numerically and actually, the chief of these vocations. The title, "Agricultural" College, is apt to mislead those who are not familiar with the above fact, and also with the further fact that the acts of both Congress and of Kansas provide for an "industrial," as distinguished from a "professional" education.

ENDOWMENT.

The endowment received from the United States Government consisted of 81,601 acres of choice land, all of which had been sold at date of last report, except 31,461 acres now on the market. The proceeds from the sale of lands are invested in school bonds, and the securities in hand amounted to $238,101.28 by last report. The annual income from this endowment is about $20,000, out of which all expenses of instruction are paid. The only aid received from the State is for the erection of buildings, in accordance with the conditions of the congressional grant. This is the only one of the State's institutions which is not dependent upon the tax-payer for its maintenance.

LOCATION.

It is situated one mile from Manhattan, Riley county, one hundred and twenty miles west of the Missouri River, in the heart of the finest agricultural State in America. The Kansas Pacific Railway, with its connecting lines, gives speedy communication with every quarter.

COURSE OF STUDY.

The course of study is shaped with direct reference to giving an industrial as distinct from a professional education. It makes the pupil intelligent and expert in the use of the English language; in the use of numbers as employed by the farmer, book-keeper and engineer; and in the use of lines as employed by the carpenter, painter and architect. Words, figures and lines are tools which all men use. It then gives thorough instruction and laboratorial or field drill in the following sciences as essentially useful to an intelligent and successful farmer: Physiology, Practical Agriculture, Natural Philosophy, Botany, Entomology, Practical Horticulture, Landscape Gardening, Inorganic Chemistry, Organic and Analytical Chemistry, Surveying, Geology, Mineralogy, Zoology, Meteorology, Agricultural Chemistry, Political Economy, Practical Law and Logic. It has an equally practical and effective course for the education of woman as a woman, instead of as a man, and as a worker instead of as a butterfly. Then, it has a well-stocked farm and nursery, and well-equipped shops, for giving boys practice in farm and nursery work, and in wood and iron work, and for giving girls drill in dressmaking, printing, telegraphy, carving, engraving and music.

Prof. Winchell on College Education.

Prof. Alexander Winchell, in a recent address, said that the ratio of college graduates to our population is continually diminishing; this, he held, would not be the case if college education were, under the conditions of modern life, as good a preparation for a successful career as it was in former times. But while the requirements of our time are totally different from those of earlier periods in the history of man, our system of education is still, to all intents and purposes, what it was in mediæval times.

Among the deficiencies of our collegiate education, the most serious, according to Prof. Winchell, is ignorance of our national organization, laws, and political history, and of the principles and laws of political life; then, insufficient knowledge of the governments and history of modern European states and of their statesmen. Last, but not least, comes comparative ignorance of the natural sciences and of free-hand drawing. Our so-called liberal education embraces but a pitiful amount of the systems of knowledge which are moving the world. Nor are these shortcomings confined only to colleges and universities. In our elementary schools, at the age when every active power is ready to spring forth and seize the living truth, we try to satisfy with syntax, and a list of names from Siberia. "All children like to see pictures, and to make pictures; but, instead of fostering this useful instinct, a picture on the slate is as horrifying to Miss Nancy or Mr. Petrifact as the name of science is to our mediævalized theologian. When a boy is aching to take a locomotive to pieces, we set him to dissecting a verb. Let him gratify his curiosity; let him entertain himself with chemical reagents; give him means to make a telephone or a steam-engine; allow him to drive nails and a jack-plane; give him a microscope and a geological hammer. With these things he will unite hand-work with head-work in a most fruitful alliance; and when he becomes a man, he may be either a mechanically expert scholar or a scholarly mechanic. As a scholar he will understand affairs and possess the common sense which will turn every situation to account. As a mechanic he will understand his business, and make a 'boss' who may be trusted without misgiving."—*The Popular Science Monthly.*

What is Systematic Farming?

This kind of farming is not chance farming, the kind too commonly practiced. Systematic farming includes a judicious rotation of crops, instead of random, not to say thoughtless, manner in which one crop succeeds another. In a correct system of farming, the object is to obtain large annual yields of crops, and at the same time keep up the standard fertility of the soil. One should learn the nature of the various crops, as each differs from the other, and ascertain also the peculiarities of the soil in the various fields.

Two crops of the same kind ought not to follow each other in rotation. They should be alternated. This constitutes a proper rotation of crops. The most simple alternation of crops, is the four course. Namely: First, green crops; second, grain; third, clover; fourth, grain. The six shift course gives a still greater variety. It is as follows: First, green crops; second, grain; third, clover; fourth, grain; fifth, beans or potatoes; sixth, grain. In neither of these rotations are there two crops of the same kind which follow each other in succession; yet in each course one-half the land is under grain crops. As an illustration of a badly-arranged course, we give the following course, namely: First, potatoes or green crops; second, grain; third, grain; fourth, grain; fifth, grass; sixth, grain. Here the grain crops—oats, wheat, and corn—follow each other without any other crops intervening. The consequence, if the practice is continued, will be to render the soil practically useless for the production of these crops. Under the four-course shift, manure is to be applied once during the rotation; that is, on the green crops, or clover, when it is plowed under for corn. In the six-course shift, the land is manured twice during the rotation; namely, to the green crops in the first year of the course, and the potatoes or other hoed crop in the fifth year. The foregoing systems of rotation may be varied to suit circumstances, but the principles governing the rotation of crops should be better understood than they are, and a more frequent application made of them.—*Grange Bulletin.*

Cheap Hog Raising.

The hog is to some extent a grazing animal; and a free run in fields of red clover, such as are common in the East, will supply many of his wants. The great hog-producing districts are not generally favored with this, and reliance is of necessity on prairie grass and corn. The present price of corn is better than that of pork, and the man who attempts to make hogs from pigs by growing corn in the ear from his cribs will soon need a guardian. It is a sure road to poverty. Indeed, corn and water in the crude state will not make hogs out of pigs, but runts. Corn is inflammatory, and in crude form produces very little growth, each pound of increase produced by it costing three times its value. Better sell your corn and buy your meat. But this is unnecessary, for the same material can be manipulated so as to make pork-raising profitable at two cents a pound. The secret is in feeding essence of corn, and no crude corn. I speak of the treatment of hogs during the growing period, the finish for market being a different process. Get one, three, or five hogsheads, according to the size of your herd; remove the inside hoop that holds the bottom, caulk well with oakum around the bottom, replace the hoop and bury side by side in the ground three feet or more, near a well or spring where there will be plenty of water, and hinge a lid on each one. If in the hog pasture, fence around or you will lose hogs by getting an overdose, as our experience will fully verify. Have large troughs, made of two-inch planks, placed contiguous. Grind your corn fine and put in each hogshead four to six bushels and a quart of salt. This may make you sick, but wait. Fill up with water, stir occasionally for two or three days, and when fermentation has fairly set in, say two or three days, begin to feed. It is always ready afterward, for there is yeast in the bottom. Feed and fill up with water at once, always keeping them full; repeating twice each day until the homœopathic dilution reminds you that further progress in that direction might be cruelty to animals, then throw in a sack of feed and proceed as before. Those who have not tried the plan will be astonished to what attenuation corn can be thus reduced and what results will be wrought.

We have seven hogsheads running in this way, and have demonstrated the fact that a 200-pound porker can be kept growing by this process at a cost of one cent a day. Each hog will drink from two to five gallons at a feed, lay down, distend, grunt and grow. For the young pigs, a trough should be shut off from the herd, and their food made richer. They need distention as do hogs, and will acquire the habit of assimilating largely. Into these tubs can be thrown the refuse from the kitchen and dairy, thereby increasing the good results. Wheat, rye, barley, millet, broom-corn seed, etc., can be ground and utilized in the same manner. I am aware that slop for hogs is no new thing, and that the farmer of the East uses his bran and shorts in that way; but what we now aim at is how to convert the corn and surplus grain of the farm into pork with the greatest profit, applicable alike to a small or a large business. The reader will understand that where hogs have no range or grass, the slop must be fed three times a day, and be of increased strength. In districts where there are no facilities for grinding, if the corn in the ear or shelled is soaked in water twenty-four hours before feeding, it will be much improved as a summer food.—*Dr. W. L. Challiss, in New York Tribune.*

THE New York *Sun*, in speaking of the crops, present and prospective, thus inadvertently gives Kansas a splendid send-off:

"Kansas and California stand side by side in grain crops the present year. From the eighth place as a wheat State in 1876, Kansas jumps to the first place. Her crop of wheat will be 30,000,000 bushels; of corn, 100,000,000 bushels."

The productive soil and healthy, invigorating climate of Kansas are marvels which the people of the East fail to understand or appreciate. Just as fast, however, as they are brought to realize that the wonderful stories of the unexampled productive capacity of our young State are true and undisputable, they take up the line of march to the "Garden of the Gods"—Kansas. This fact is attested by the thousands and tens of thousands that have immigrated to and settled within our fair State within the past year. In 1860 Kansas had a population of but 100,000. There is no doubt but that to-day she has fully 850,000, and from present indications Kansas will have in 1880 considerably over 1,000,000 inhabitants.—*Independence Kansan.*

THE destiny of America is onward and upward. We are exporting more of our products than ever before. We are selling more than we buy. We produce enough to meet our wants and a portion of the wants of foreign nations in the line of our products. We can always produce all kinds of farm products and deliver them to foreign ports as cheap or cheaper than most other nations. The balance of trade henceforth should be on our side, and if our people don't grow rich, it will be because the laws of trade are hampered by unfriendly legislation. If our people can be economical; if they will stop buying so much on credit; if they will strive to produce the best and most; if they will avail themselves of their great advantages of soil, climate and variety of productions and manufacturing and commercial facilities, they ought to grow wealthy and prosper as no other people on the face of the earth. Let each individual prosper, and the nation at large will. The nation is but the aggregate of individuals. Each idividual helps to make the nation.—*Rural World.*

THE following excellent and timely suggestions are from the *American Cultivator:* Hap-hazard farming, without definite plan or purpose, will not pay in this country to-day. The farmer must needs be a cultivator of the soil and a manufacturer of grain and roots, butter and cheese, meat and fruits out of the raw material of air and soil and fertilizer; he must be a business man, to know when to buy and when and how to sell; he requires to be a student of nature and its manifestations; in fine, he requires to be all that sound mind and healthy body can do for him, as well as all that can be learned through comparisons, discussions and conferences with his fellow-workers in the same field of labor.

CINCINNATI sugar trade is something over $5,000,000 annually.

THE INDUSTRIALIST.

SATURDAY, DECEMBER 28, 1878.

JNO. A. ANDERSON, Managing Editor.

ASSOCIATE EDITORS, MEMBERS OF THE FACULTY.

THE newspapers of the State will confer a great favor upon us by giving the following notice a place in their columns:

The next term of the Agricultural College will begin Friday, January 3d, 1879. Tuition absolutely free. Students can enter at any time, if able to pass an additional examination upon the subjects studied by the classes which they expect to enter.

IF an industrial college provides the same road to knowledge found in literary colleges, its graduates must inevitably walk to the same point reached by their graduates, other things being equal; and, having gained the same knowledge and skill, or capital, and this capital commanding a greater profit in the practice of, say, law than in farming, the chances are that its graduates, actuated by a proper self-interest, will become lawyers, and will not become farmers, because the skill demanded by the two vocations differs as wholly as ability to write a poem differs from ability to construct a locomotive. The average curriculum of literary colleges is the result of careful thought, corrected by the experience of centuries; and it justly claims the confidence awarded to a route over which, for generations, men have passed to the highest eminences of law, theology, medicine and science. But for this very reason it is neither the direct nor the best road to success in the field, shop, or at the counter.

Special Training for Girls.

Women receive lower wages than men, not because they do less or poorer work, but because the vocations now open to them are densely crowded by those who must labor at any price or starve. And he is very much of a brute who would rather see pure women driven by impending starvation into the ranks of cancerous prostitution than to see this pressure relieved by the opening of new avenues to their virtuous self-support, even though such a measure should offend his personal prejudice or subject to him to personal competition in business.

But, aside from this consideration, the world has a moneyed interest in the matter. Perfumers imitate the fragrance of the flowers, and musicians the notes of birds; still, as a question of cost and success, the violet and canary, because of their distinctive structure, work easier and better than their copyist, giving to the world greater pleasure at cheaper rates. And, while the perfumes of the druggist are, perhaps, better than none, the world cannot afford to abolish God's originals for the profit of the imitators. No more can it afford to ignore the womanly power of woman. Not until druggists will, with their essential oils, perfume the air of a county as generously and cheaply as the fruit trees in blosson-week freight the air of a State, can the world afford to pass by the superior ability of woman to do many needed things, just as the birds sing and flowers distill fragrance. So that on the ground of personal interest, humanity cannot afford, either through thoughtlessness or because of the traditions of an abnormal education, to withhold from the girl a special training for that organic work which belongs to all women, be they married or single, intelligent or illiterate, queens of fortune or queens of industry.

New Process for Preserving Iron.

It has been but a few years since iron was used almost exclusively for all purposes for which it would answer; steel being employed only where iron was inadequate to the purpose. But by the Bessemer process of manufacturing steel, it is produced so cheaply that it has superseded iron in many cases where iron once had no rival. This substitution of steel for iron has gradually passed from the finer and more delicate articles to the rougher and stronger ones, until steel rails are used on our railways, steel boiler-plate in constructing engines, and steel arches, tie rods, girders, etc., in building bridges.

But whether iron or steel be employed, the metal will oxidize, and ultimately be so far weakened as to be no longer fit for use. It has long been a problem, to prevent this oxidation. The efficient preservation of iron against rusting is at present provided for only in cases where human life would be greatly endangered by its neglect, as in railway bridges and steamers. Some manufacturers of bridges dip every piece of iron in oil heated to eight hundred degrees. The iron is first cleaned from rust by immersion in hydrochloric acid. The acid is removed by the use of quick lime and afterward washing in hot water. It is then immediately plunged into a bath of hot linseed oil, which protects it from the action of the atmosphere. Afterward it is riveted in place and painted. Although having passed through this elaborate process, the paint must be continually renewed. But all this care and expense does not entirely protect against rust.

Prof. Barff, of London, has recommended a new means for preventing oxidation, which is being introduced abroad. He has discovered a process for coating iron with its own sesquioxide, by the action of superheated steam. If iron be exposed, in a closed chamber, to steam of a certain temperature, it will become covered with oxide, the thickness and hardness of which depend upon the temperature of the steam and the length of time submitted to experimemt. An exposure for five hours, to steam having a temperature of five hundred degrees, will produce a coating which will resist the action of emery paper for some time and will effectually protect from further corrosion, even in a moist atmosphere, if not directly exposed to the weather. It is thus hermetically sealed in a coating of common ferric oxide. If the temperature be raised to twelve hundred degrees and the time of exposure increased one or two hours, the envelope of sesquioxide will not only resist this mechanical action but may be exposed to any kind of weather without further action on the iron. Since this oxide is harder than the iron and adheres to it much more firmly than the particles of iron cohere to each other, there is, in addition to the resistance to chemical action, an actual increase of strength and of resistance to all mechanical action. Prof. Barff's experiments have given these results. If they are borne out in practical applications, mankind will be indebted to him scarcely less than to Bessemer.

I have pointed out the fact that in the rivalry between iron and steel the former is losing ground. This invention may so extend the use of iron that it may successfully compete with wood in many cases where the latter is now generally employed. Thus iron may partially, at least, regain the prestige lost in the competition with steel. By preventing oxidation, iron may be made quite as light as wood and be stronger and much more durable.—*G. H. Failyer.*

German and American Education.

The American Consul at Wurtemberg estimates that over $4,500,000 are annually expended by the seven thousand Americans studying in German schools and universities; and suggests that this amount would go far toward developing and sustaining similar institutions at home. As to the latter proposition, there can be no doubt; but as to the relative advantages of German and American schools, there are facts worthy of consideration on both sides of the question.

The first is that Germany is as different from America, not only in its language, but in its laws, usages and modes of thinking, as is farm life from cabinet-making. If a parent wishes to educate a boy for earning a livelihood in Germany, then the German school is the better. But if he intends that the boy shall do a man's work in America, then sending him to Germany is as ridiculous as it would be to send him to sea for the purpose of educating him as a farmer. And this fact is very generally overlooked by American parents, who, as a rule, are more influenced to such a course by the glamour of a "foreign" education, than by common sense. There can be no doubt whatever that a "German" or "Paris" education has unfitted nine out of ten American students for success in practical American life. If the paternal Moneybags wishes to train his son in the quickest methods of disposing of the ancestral fortune, and, at the same time, of going to the devil physically and morally, then the foreign education is just the thing. But as a rule most parents have less cash and more sense than has Moneybags.

On the other hand, however unpleasant it may be to our national vanity to admit the fact, yet it is a fact that the German system of education is far more practical than is ours. Their common schools are shaped for the direct benefit of boys and girls who will have to earn a living on the farm or in the shop; while ours are shaped and run for the direct benefit of those who will be teachers, lawyers, doctors or preachers. And this difference, which is a broad and far-reaching one, gives to the student in Germany cash values of knowledge which he cannot obtain in American schools. There is a rigid checking of "thoroughness" by "will it pay?" in the German system, that America would do well to imitate. And there is a hard-headed realization of the value of useful knowledge, on the one side, and of the uselessness of "literary" or "scientific". tomfooleries on the other, which, if introduced into our American system, would be worth silver and gold to the working classes of 1900. A royal good thing is the sturdy common sense which controls the schools of Germany in the interest of the ninety-seven industrialists, instead of that of the three professionalists. And the same is true of their higher technical schools.

But American students rarely go to Germany for these advantages. Usually they are sent simply that it may be said they had studied "abroad." Those who go for other reasons generally confine themselves to medical or "scientific" specialties; and are apt to return with a kind of special knowledge for which there is no market in this country. Instead of spending $4,500,000 a year for the education of 7,000 Americans in Germany, it would be far better if 4,500,000 American citizens would kick out about 7,000 samples of nonsense that are in our educational system, methods and institutions, and have that system fully adapted to the practical education of American students for American life.

The Times Still Ahead.

A statement showing the amount of postage paid by the different daily newspapers of Kansas.

[From THE TIMES, Nov. 28, 1878.]

It is the plain duty of THE TIMES to give the public, and particularly our advertising patrons, the facts concerning its circulation, in order that they may fully appreciate its value and importance as an advertising medium.

The surest way to obtain the exact circulation of the papers of the State outside of the counties in which they are published, is from the amount of postage paid by them to the Post-office Department.

Below we give the amount paid by THE TIMES, taken from the post-office receipts of this date.

The amount paid by other papers in the State is taken from the Atchison *Champion*, which claims to have the amount from official sources, and being published in its columns is evidence that it accepts it as correct so far as it is concerned.

THE TIMES, Leavenworth, Kansas	$882.96
Champion, Atchison, Kansas	336.36
Commonwealth, Topeka, Kansas	302.12
Patriot, Atchison, Kansas	112.26
Blade, Topeka, Kansas	107.36
Public Press, Leavenworth, Kansas	102.00
Monitor, Fort Scott, Kansas	73.40

From the above it will be seen that THE TIMES pays more than double the postage of any other daily paper in the State.

THE TIMES pays more postage than any other two daily papers in the State.

THE TIMES pays more postage than any other three daily papers in the State.

THE TIMES pays more postage than any other four daily papers in the State.

THE TIMES, after deducting the amount paid for postage by all the other daily papers in the State upon their exchange list, *pays more postage on its bona fide circulation than all the other daily papers in Kansas.*

THE TIMES has a circulation in the county of Leavenworth on which no postage is paid twenty times greater than any other paper in Kansas.

THE TIMES is this day enlarged four colums, and in addition to being the cheapest and best paper in Kansas, is the largest. Its State News department is alone worth the price of subscription, and is a special feature of the paper, which commends itself to those who desire to keep posted in regard to items of interest in Kansas.

THE TIMES is pre-eminently a newspaper, and with its new and increased facilities and additional editorial force, will command a place in every household in Kansas.

DAILY TIMES, per annum	$8 00
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Address D. R. ANTHONY, Leavenworth, Kansas.

THE INDUSTRIALIST.

SATURDAY, DECEMBER 28, 1878.

The next term of the Agricultural College will begin Friday, January 3d, 1879.

Prof. VanDeman is spending the holidays at his home, in Allen county.

Skating bees, surprise parties, and sleigh rides constitute the principal vacation pastime.

The snows of the past two weeks have greatly protected the winter wheat, and prevented a very severe freezing during these cold nights.

Prof. Failyer informs us that at this station the thermometer has twice this winter reached seven degrees below zero. Well, that's cold enough for us, thank you.

W. C. Stewart talks of putting up a telephone line from Manhattan to St. George, to be used by Purcell & Anderson, who are handling grain in both of these places.

Mr. Walters has moved into his new house, near Bluemont. From his residence he has a splendid view of Manhattan and the beautiful natural scenery surrounding it.

The cold weather still continues. The sleighing has been good for over two weeks. Ice is from six to eight inches thick—the clearest and best we have ever seen, and the ice dealers are reaping a rich harvest.

A number of old College students, who have been absent and engaged in their several occupations, came back to Manhattan to spend the holidays. George Wake, a lumber dealer in Ellsworth, and John Winne, a clerk in Salina, are among the number.

Burgoyne, the Manhattan photographer, is an adept in his profession. His pictures are always well taken and finely finished. His views of the Manhattan high school building and the various College buildings, will compare favorably with the work of Eastern artists.

The funeral of George Platt, which took place on Wednesday at two o'clock P. M., deeply tinged with sorrow and sadness an otherwise joyous and merry Christmas. It is unfortunate for the near relatives of the deceased that the funeral was not held upon some other day. As it is, every succeeding Christmas will be to them—especially the father and mother—another funeral day.

George Platt, whose illness was recorded last week, died at Oberlin, Ohio, Friday night, December 20th, a few hours before his mother's arrival at his bedside. This community has not been so shocked for a long time as it was by the news of his sudden illness and death. Only a few weeks since, George, full of hope and expectation, bade his many friends good-bye and started East to enter Oberlin College. He was in the bloom of youth, energetic, consecrated, and filled with zeal. He reached his destination, and the letters that came back told of his success at every step, and of the headway which he was making in his studies. But just as George's parents had settled down to the enjoyment of his prosperity, the telegraph flashed the sad news that he was sick—that he was worse—that he was dead!

Mrs. Platt started home with the corpse last Saturday, but did not reach Manhattan until Wednesday morning. Oh, what a journey! How long that mother will remember that lonely ride! And how many hearts here at home poured forth their prayers to God for her; that in her bereavement, her sadness and sorrowing, she might lean upon that arm which would lighten her grief and bind up the wounds that death had made.

The funeral was very largely attended on last Wednesday afternoon. The particulars are given in another article. Looking back at George's last days, his illness, death and burial, it seems as if it were but a wild dream. Is it possible that those fingers which were trained to make such music, and that voice which was so rich with harmonies, shall never be heard again? Yes, so far as this world is concerned; but we sorrow not as those without hope. In the other world, the new Jerusalem, those beautiful strains, softened and sweetened by the presence of God himself, shall, throughout endless ages, make melody in the hearts of the redeemed.

Truly, man proposes, but God disposes.

THE INFLUENCE OF A NEWSPAPER.

The following is an extract from the leading editorial in the last Webster Society *Reporter*, prepared by Mr. D. S. Leach, a student from Mitchell county, and read at the joint session which the two societies held at the close of the term:

"Every paper, no matter how large or how small, has its influence, either for good or for evil. Whether it be the Webster *Reporter*, the Alpha Beta *Gleaner*, or the mammoth sheet of the London *Times*, the influence is still there, only it increases with the popularity of the paper and the ability of the editor. It therefore follows that every person, man or woman, Republican or Democrat, who fills an editorial chair, should be actuated by only one desire, and that is to promote the happiness and prosperity of the people at large.

"Every editor is a public teacher, and should realize the position he holds in the school of the world. Man's political and religious opinions are swayed to a great degree by the newspaper literature of the day. Horace Greeley, during his prime, controlled, to an almost unlimited extent, the political opinions of over two hundred thousand voters. Having firm faith in his honor, integrity and ability, they acknowledged him as their leader and followed him with as much enthusiasm as did the Crusaders the pleadings of Peter the Hermit. No matter what Mr. Greeley may have done or said during his race for office, we must admit that he was one of the greatest benefactors and teachers the United States has ever produced. And what a blessing it would be, if every editor had half the ability, integrity and honor of Horace Greeley.

"Now, we do not mean to insinuate that either of us has the ability of Horace Greeley, or that this paper is equal in influence to the New York *Tribune;* but we do affirm that the Agricultural College students, in the matter of college papers, have no peer among the institutions of learning in the great West. Their papers may be small, and perhaps article after article may never be printed; but nevertheless, in point of honor, honesty and high moral character, they are second to none. And we hope that the paper presented for your consideration to-night will be productive of some good and meet with your approbation."

STUDENT LIFE.

The student leads a life differing from that he has known in the past, or that he shall know in the future. There is an indescribable charm in student life. The associations, their mutual interests, pleasures and labors, all tend to strengthen the ties between them. Even emulations, if they be without envy, aid in the same general result; for who does not esteem a rival who by honorable means and hard study wins a portion of the class honors. Such rivals are generally the warmest friends.

We may not now realize to its fullest extent the warmth of feeling which students have for each other. But when these pleasant days are gone; when we are scattered all over the State, performing sterner duties than those of the school-room; then the memory of the time spent here will cause the heart to beat warmer and faster, and there will be an involuntary wish that the good old times could return.

The pleasures need not be enumerated. Even the most stoical acknowledge the various enjoyments, the least among which is not the consciousness of duties well performed and of knowledge acquired. A continuous glare from a summer sun is not the most enjoyable, but just enough cloud to give a golden tint to the light. And so with the student: he has arduous labors; his teachers may often seem exacting; he may be compelled to burn the "midnight oil" over some knotty problem in mathematics, or some intricate reaction in chemistry; but he will ultimately realize the truth of the triplet,

"But he who wins at last
Will love the very toils
That fortune round him cast."

But it is useless to speak further of the life at school. All are now realizing what it is. And the world has been likened to a school. Prentis calls it "Knock-About University." All should read and re-read his address entitled "The World a School;" for our student life here is but a preparation for that other school—the world.

"There is a tide in the affairs of men, which, taken at the flood, leads on to fortune." Watch the tide. Be energetic, that you may launch your bark when the tide is at its highest, and not wait until its ebb.—*From the Gleaner, published by the Alpha Beta Society.*

NATIONALIST ITEMS.

The propriety of collecting toll from transient travelers over our bridges is being agitated, and is rapidly growing in favor. Bluemont Farmer's Club is taking the lead, we believe.

The large amount of snow now on the ground insures at least a tolerable crop season next year. It may be considered certain that there will be no general failure, and, with proper care, the yield should be good.

It is rumored that the K. P. Railroad Company have agreed to make a material reduction in their freight rates on coal, and that the new tariff will soon go into effect. The K. P. will certainly gain the good will of hundreds of coal burners, if this report be true.

Maj. Inman, the best authority on such matters in Kansas, predicts that there will be many severe storms this winter, and a good beginning in that direction has already been made. Farmers ought to take extra pains with their stock to have it properly sheltered.

The funeral services of George L. Platt were held in the Presbyterian Church, Christmas, in the afternoon. The crowded house and the deep feeling manifested testified to the esteem and affection in which he was held by this community, which has known him from early boyhood. Prayer was offered and remarks made by the pastor of the family, Rev. R. D. Parker. President Anderson made a short address, full of words of comfort and hope. Rev. Mr. Campbell offered the closing prayer. Appropriate music by a double quartette, with Miss Mudge as organist. The societies to which Mr. Platt belonged were very largely represented.

The deepest sympathy for Prof. and Mrs. Platt and family, who have lost so noble a son and brother, is felt by every heart in this community. Mrs. Platt's sad journey to Oberlin, her wearisome return home with the body of her oldest son, has made every heart ache that has known the circumstances. God comfort and help them is the prayer we all offer.

DIRECTIONS TO APPLICANTS.

TERMS OF ADMISSION.

Candidates for admission must be fourteen years of age, and pass a satisfactory examination in reading; arithmetic, through decimal fractions; and English grammar, to syntax. Classes are started at the beginning of each year in Drill in Arithmetic and Drill in English; and the pupil must have the knowledge above indicated, else he will be unable to retain position if admitted.

Pupils will be received at any time during the year, if able to pass an additional examination upon the subjects studied by the classes which they expect to enter. But they will find it greatly to their advantage to be present at the opening of each term, or as soon thereafter as posssble.

GRADES.

Both the Literary and Industrial recitations are graded daily upon a scale of 100; and an examination of all classes is made at the close of each month. A student not attaining an average grade of sixty is promptly dropped to a lower class, or excluded from the Institution until able to do so. The work of grading is strict and uniform in all the departments, and this process is rigorously used for sifting out incompetent and indolent pupils; thus more than accomplishing all that is designed to be effected by a "high standard of admission." Hence, the student's continuance in the College wholly depends upon his own action.

The course is based upon the determination to make the labor required in the preparation of one industrial and three literary recitations as much as the average student can perfectly perform, in ten hours a day. We design to give the pupil the worth of the time expended at College; and, in order thereto, he must do a full day's work with brain or hand. Only those students who can maintain a standing of ninety in each study will be allowed to take more than the prescribed number of recitations; and no one will be permitted to have less than one industrial and three literary recitations.

RELIGIOUS.

Unless otherwise directed by parents, students are required to attend chapel at 8:30 A. M. on academic days, and divine service once every Sabbath.

EXPENSES.

There are no charges whatever for enrollment, attendance or instruction in the regular courses; nor are there any "contingent fees" for the repair of buildings, for the use of books or apparatus, for diplomas, or the kindred privileges usually grouped under the term "contingent." Male students are furnished instruction, the use of apparatus, instruments or tools, in both the literary and industrial classes marked out for them, without any charge. And the same is true of female students in the regular classes provided for them. Printing and Telegraphy are industrials primarily provided for the education of female students, and male students taking either of these are charged $1 per month for use of instruments.

Instrumental music is a fine art or "accomplishment," rather than a mechanical art. We do not place it among our "industrials" in the same sense, or for the same purpose, that we do those provided for teaching the trades. Accordingly, a fee of $12 per term, or seventy-five cents per week is required from female students for tuition and the use of pianos or organs.

The only charge made for material in either the literary or industrial departments is for the chemicals used by students in laboratory practice, which are furnished at wholesale prices, and amount to but a small sum.

Furnishing an absolutely free education is as much as can be reasonably asked; and the Institution neither boards, clothes, nor supplies the student with text-books. Boarding can be obtained in private families at from $2.75 to $4 per week. Washing costs from seventy-five cents to one dollar per dozen. Text-books, which can be procured in Manhattan, cost from $2 to $5 per term.

No student need expend over $5 per week; and many of our best pupils are living at $1.25 per week. Students desiring to "board themselves" can do so at from $1 to $2 per week. In a club of four young men, renting a house, the average cost to each for the term was $1.11 per week.

LABOR.

Manual labor by the students may be for either of two purposes: First, to acquire skill in a given art; second, to earn money. In the first case, the labor is educational; in the second, it should be paid for by the party benefited.

Educational Labor.—Manual labor in the recitations of the Industrial Departments, like mental labor in those of the Literary Departments, is purely educational and will not be remunerated. While the interest of the student will be held paramount in the direction of this labor, the practice necessary to dexterity will be required.

Remunerated Labor.—When the Institution needs labor on the Farm or elsewhere which is not educational, but simply for its own profit, and which a student is able and willing to perform, it becomes an employer instead of a teacher, and he an employe instead of a scholar. It pays for work, he works for pay. The relation between them is commercial, not educational; and both parties must act upon business principles. Hence, the College furnishes only such employment as its own interests require, and will pay according to the value of the service rendered at from seven to ten cents an hour.

AMOUNT EARNED.

It is impossible to predict how much a given person can earn, since that depends upon what he can do and what work there is to be done. Hence, it is wholly impossible for us to answer the question so often asked: "Do you think I can meet my expenses by work?" Some students make one-half their expenses, some the whole, and exceptional men have made more than expenses. As a rule, a faithful boy skilled in farm work can earn half his expenses on the Farm or in the Nursery. During the year he can ordinarily acquire sufficient skill in the wood or iron shops to enable him to make articles for sale. The whole question is one for his own consideration and decision. We can teach all who come, but cannot absolutely *promise* anything more. Hitherto we have refrained from holding out strong inducements respecting the amount of labor we might have to offer; but in view of the fact that during each of the last three years we have had more to do than the students could perform, we are inclined to give greater and positive encouragement on this point. Any boy who is in dead earnest, who is familiar with farm operations, and who can raise $50 to start with, should be able to carry himself through the four years' course. And certainly this places an education within the reach of every determined boy. As yet we are unable to offer similar advantages to girls, not requiring labor in the College departments which they can perform.

RULES.

1. Behave as a true man or woman should, at all times and in all places.

2. Attend to your own business promptly, thoroughly and courteously; and vigorously let alone that of other people.

3. Penalty: "Leave!"

PUBLICATIONS.

The "Hand-Book," published in 1874, containing a full discussion of the educational question and the aims of the Institution, will be forwarded to any one desiring it.

THE INDUSTRIALIST, a weekly journal edited by the Faculty and published by the Printing Department, contains original and seasonable articles on the Farm, Orchard, Trades, Sciences, and Education. Price, 75 cents a year. Address A. A. Stewart, Manhattan.

CALENDAR.

Winter Term 1879.—Begins Friday, January 3d, 1879.

TO NEW STUDENTS.

Bring the text-books you have been using. On arrival, first arrange for your boarding. A. A. Stewart, Sup't Printing Department, will furnish information, either by letter or on application, concerning boarding places or rooms for rent. Report to the President at 8:30 A. M., immediately after chapel, for enrollment.

For further information apply to Jno. A. Anderson, President, Manhattan, Kansas.

RAILROAD TIME-TABLE.

KANSAS PACIFIC RAILWAY.

PASSENGER ARRIVES.

No. 2, going East	11:14 A. M.
No. 4, going East	3:47 A. M.
No. 1, going West	5:10 P. M.
No. 3, going West	4:33 A. M.
No. 7 (freight), going West	8:15 A. M.

Nos. 1 and 2 run daily; Nos. 3 and 7 run daily except Monday; No. 4 runs daily except Sunday. Passengers with tickets are carried on No. 7.

GEO. C. WILDER, Agent.

KANSAS STATE AGRICULTURAL COLLEGE.

FACULTY.

J. A. ANDERSON, *President, Prof. Political Economy.*
M. L. WARD, *Prof. Mathematics and English.*
G. H. FAILYER, *Prof. Chemistry and Physics.*
E. M. SHELTON, *Prof. Prac. Agricul., Sup't Farm.*
H. E. VAN DEMAN, *Prof. Botany and Horticulture.*
J. E. PLATT, *Prof. Elem'y English, Mathematics.*
JNO. D. WALTERS, *Teacher Industrial Drawing.*
HON. D. J. BREWER, *Lecturer on Practical Law.*
T. T. HAWKES, *Sup't Mechanical Department.*
A. A. STEWART, *Sup't Printing Department.*
W. C. STEWART, *Sup't Telegraph Department.*
MRS. M. E. CRIPPS, *Sup't Sewing Department.*
W. L. HOFER, *Teacher of Instrumental Music.*

INDUSTRIAL EDUCATION.

The real value of an education to the student depends upon two things: First, the practical worth of the knowledge taught; and, second, the degree in which he makes it his own. Hence, the ability of any institution to give a practical education depends upon the kind and aim of the knowledge it teaches, and upon the thoroughness of the instruction therein. The State Agricultural College was directly endowed by Congress, and is guided by the State, for the specific purpose of furnishing to the industrial classes of Kansas a "practical" education, that is, "one fit for use." As its name indicates, and as the statistics of the industries of the State require, its chief work must be that of giving a useful and usable education to those who will engage in farming; and, therefore, the Farmer's Course must, from the nature of the case, be its main one.

FARMER'S EDUCATION.

Words and figures are merely instruments with which to record ideas. They are not themselves ideas, nor should they be made the chief end of an education. As a wagon is necessary to haul grain, so are they a necessary part of an education; but as the wagon is not the grain, so they are not the knowledge which the farmer converts into money. Hence, the classics and higher mathematics are not taught. But it will be noticed in the following course that so soon as the pupil acquires working skill in the use of the English language as a tool, and of figures and lines as mathematical tools, those arts and sciences which present knowledge that has a cash value to the farmer are taught as rapidly as their importance and thorough acquisition will permit. Studies numbered (1) and (4) in the second, third and fourth years are the spine of the course, to which the others are as ribs and muscle.

FARMER'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
6. Logic.	1. Practical Agriculture (advanced.)	6. Practical Surveying.	1. Botany, Entomology.	6. Industrial Drawing.	1. Physiology.	6. U. S. History, Industrial Drawing.	1. Drill in English.
5. Agricul. Chemistry, Meteorology.	2. Geology, Mineralogy.	5. Organic, Analytical Chemistry.	2. Inorganic Chemistry.	5. Physics.	2. Rhetoric.	5. Adv'd Arithmetic, Book-keeping.	2. Drill in Arithmetic.
4. Zoology.	3. Polit. Economy, Practical Law.	4. Horticul., Landscape Gardening.	3. Practical Geometry.	4. Practical Agricul. (elementary).	3. Algebra.	4. English Structure.	3. Industrial Drawing.
3. Polit'l Economy, Practical Law.	4. Zoology.	3. Practical Geometry.	4. Horticul., Landscape Gardening.	3. Algebra.	4. English Literature.	3. Industrial Drawing.	4. English Structure.
2. Geology, Mineralogy.	5. Agricul. Chemistry, Meteorology.	2. Inorganic Chemistry.	5. Organic, Household Chemistry.	2. Rhetoric.	5. Physics.	2. Rhetoric.	5. Adv'd Arith., Book-keeping.
1. Practical Agriculture (advanced.)	6. Logic.	1. Botany, Entomology.	6. Household Economy.	1. Physiology.	6. Industrial Drawing.	1. Physiology.	6. U. S. History, Industrial Drawing.

WOMAN'S EDUCATION.

Nearly one-half of our students are females, and the Woman's Course is prepared expressly for their liberal and practical education. We have no doubt whatever that practical men and women, who understand what it means and what it seeks to do, will fully endorse it.

WOMAN'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spr'ng.*	*Fall.*
6. Logic.	1. Farm Economy, Special Hygiene.	6. Household Economy.	1. Botany, Entomology.	6. Industrial Drawing.	1. Physiology.	6. U. S. History, Industrial Drawing.	1. Drill in English.
5. Phys'l Geography, Meteorology.	2. Geology, Mineralogy.	5. Organic, Household Chemistry.	2. Inorganic Chemistry.	5. Physics.	2. Rhetoric.	5. Adv'd Arith., Book-keeping.	2. Drill in Arithmetic.
4. Zoology.	3. Polit'l Economy, Practical Law.	4. Horticul., Landscape Gardening.	3. Industrial Drawing.	4. English Literature.	3. Algebra.	4. English Structure.	3. Industrial Drawing.
3. Polit'l Economy, Practical Law.	4. Zoology.	3. Industrial Drawing.	4. Horticul., Landscape Gardening.	3. Algebra.	4. English Literature.	3. Algebra.	4. English Structure.
2. Geology, Mineralogy.	5. Phys'l Geography, Meteorology.	2. Inorganic Chemistry.	5. Organic, Household Chemistry.	2. Rhetoric.	5. Physics.	2. Rhetoric.	5. Adv'd Arith., Book-keeping.
1. Farm Economy, Special Hygiene.	6. Logic.	1. Botany, Entomology.	6. Household Economy.	1. Physiology.	6. Industrial Drawing.	1. Physiology.	6. U. S. History, Industrial Drawing.

MECHANIC'S EDUCATION.

Because of the adaptedness of the leading course to the wants of the intelligent mechanic, it has been found practically unnecessary to diverge from the Farmer's Course. Additional studies, specially adapted to the mechanic's use, will be furnished in a Post-Graduate's Course.

If it be urged that the distinctively agricultural knowledge taught in the Farmer's Course is not directly valuable to the mechanic, we reply that, admitting the point for the purpose of argument, yet: 1. This knowledge is of more practical value to the mechanic than is the Latin, Greek, or a half dozen other things embraced in the usual course preparatory to the professions; 2. That the great majority of Kansas mechanics will also be more or less engaged in agriculture; 3. That those studies in the course which are directly valuable to the mechanic, together with the shop facilities, offer a better mechanic's education than can be elsewhere found west of the Alleghanies.

INDUSTRIAL DEPARTMENTS.

Having knowledge in the head is one thing; ability to use it with the tongue, fingers or feet is quite another thing. Both are vital to success in practical life. A man might thoroughly understand the theoretical principles of carpentry, and yet, not having used the tools, be wholly unable to earn carpenter's wages. So in all other vocations. Accordingly, instruction is given in the following well-equipped Industrial Departments, and every student is required to recite in some one of them, as selected by the pupil or parent:

FOR MALE STUDENTS.	FOR FEMALE STUDENTS.
The Farm.	Dress-making.
The Nursery.	Printing.
Carpentry.	Telegraphy.
Cabinet-making.	Scroll-sawing.
Turning.	Carving.
Wagon-making.	Engraving.
Painting.	Photography.
Blacksmithing.	Instrumental Music.

Each of these departments is conducted exactly as in daily life, and aims to give precisely the drill received by an apprentice. No charge is made, either for tuition or material, from male students taking the Industrials provided for them; nor from female students taking the ones provided for them, except in the Department of Instrumental Music. Male students taking either Printing or Telegraphy are charged $1 per month for the use of material and instruments.

DEPARTMENTS OF INSTRUCTION.

DEPARTMENT OF AGRICULTURE.

PRACTICAL AGRICULTURE.

Second Year:—General principles of breeding; history and characteristics of breeds; adaptation of different breeds for special purposes and localities; implements of simple tillage; mechanical principles involved in their construction; act on of the plow upon soil and subsoil; principles of draught; influence of different adjust ents upon draught; use of the dynamometer; value of hoed crops in a system of husbandry; the cultivation of corn and roots; soils that need drainage; how to lay out a system of drains; house drainage; sewerage.

Fourth Year: General view of agriculture, an cient and modern; agricultural progress of the last century; relative advantages of mixed husbandry and special farming; the selection and arrangement of the farm with reference to the system to be pursued; rotation of crops; genera advantages of a rotation; the best rotation with reference to disposition of labor, production of manure, and extermination of weeds; pasturage and production of grain and forage crops; manures, how best housed and applied; composting manures; commercial fertilizers; systems of feeding; stall feeding; steaming food; soiling; experiments in feeding; farm buildings; farmhouses; barns.

FARM ECONOMY.

Woman's Course, Fourth Year: Dairy products as human food; influences affecting character of milk; manufacture of condensed milk; the factory system and household plan of cheese-making; treatment of rennet; general process of cheese manufacture; subsequent t eatment of cheese; butter-making; creameries; "deep" and "shallow" setting systems; general process of butter-making; packing and preserving butter.

DEPARTMENT OF BOTANY AND PRACTICAL HORTICULTURE.

This department embraces a course of instruction in the elements of botany, structural and systematic, with a constant attention to the practical application of botany to the farm, orchard, garden, nursery and forest; also a course of lectures on Landscape Gardening. The instruction is mainly given by lectures, accompanied by regular practical drill in all the work of the fruit, vegetable and flower gardens, nursery, orchard, vineyard and ornamental grounds.

The lectures in Practical Horticulture embrace the following and kindred subjects: The relation of atmospheric motion, moisture and temperature to horticulture; seeds, the means of collecting and preserving; propagation, by seeds, cuttings, layers, suckers, grafting, budding; care of young plants; improvement of varieties; management of commercial and farm nursery; modes of pruning; the orchard; fruit suitable for orchard and garden culture; the flower, vegetable and fruit garden; importance and mode of forest culture; shelter belts and their influence; weeds and useful plants; noting the species of trees worthy of culture, either for profit or ornament.

LANDSCAPE GARDENING.

The lectures on Landscape Gardening not only unfold the accepted principles of the art, but at the same time give special attention to such applications of the art as may be made universally available in laying out and improvement of farms and the homes of the people. These lectures are accompanied by a practical drill in in the work of laying out and plotting grounds topographically.

CHEMICAL DEPARTMENT.

PHYSICS.

This includes a full consideration of the laws of mechanics, of liquids, gases and vapors, weights and measures, and specific gravity, followed by experimental study in the Physical Laboratory of the laws of heat, light, with spectrum analysis, electricity and magnetism, and the relation of these forces to plant and animal life. Text-book, Ganot.

INORGANIC CHEMISTRY.

This course is opened with a careful study of chemical forces and the laws governing chemical combination. The elements, with their compounds, are next considered in succession as to their history, properties, manufacture, and especially with regard to their uses on the farm and in the arts. These lectures are accompanied by an extended course of laboratory practice in which each student performs every experiment with his own hands. Text-book, Eliot & Storer.

ORGANIC CHEMISTRY.

This comprises a thorough study of the chemistry of the organic compounds, the composition of plants and of the various compounds derived from them. Constantly accompanied by laboratory practice.

CHEMICAL ANALYSIS.

In this course each student is furnished his stand in the Qualitative Laboratory, completely furnished with apparatus and chemicals for his own use. He here performs analyses of farm soils, plant ash, commercial manures, ores, mineral waters, commercial compounds, etc. After completing this course, he enters, if he desires, the Quantitative Laboratory, where he pursues a full course in quantitative analysis. Text-book, Kedzie's Manual.

AGRICULTURAL CHEMISTRY.

This includes a thorough consideration of the application of chemical principles to the economy of the farm; the origin and formation of soils; the classification and composition of soils; the analysis of soils and their adaptation to purposes of production; the composition and use of manures; composting; chemistry of farm operations, such as plowing, fallowing, draining, etc. Text-book, Johnson's "How Crops Feed."

METEOROLOGY.

Embracing the composition of the atmosphere; atmospheric pressure; temperature and humidity; laws of storms; rain, snow and atmospheric electricity. A full course in meteorological observations is taken under direction of the Signal Service. Text-book, Loomis' Meteorology.

MINERALOGY.

This includes the study of the laws of crystallography, with the properties, forms and uses of the principal minerals of the United States. Blowpipe analysis forms a very important part of the course, each student being required to name and identify a large series of minerals. Text-book, Dana's Mineralogy.

HOUSEHOLD CHEMISTRY.

A course of lectures on this subject is yearly delivered to a class of young ladies. The course embraces the chemistry of cooking; the composition of food; bread; tea, chocolate and coffee; butter and milk; ripening and preservation of fruits, etc.

SPECIAL COURSES

Are constantly in progress in Assaying, Pharmaceutical Chemistry and Photography.

ENGLISH LANGUAGE.

Words are simply tools used to express ideas; and, since the vast majority of our communications are made by the employment of spoken or written words, skill in using them is as profitable to the industrialist as dexterity with the needle is profitable to the seamstress. The direct aim of the course is to make the student skillful and intelligent in handling the machinery called language, just as an engineer handles a locomotive; and no drill will be omitted, or effort spared, to gain this end. Apart from the course itself, which is far more practical and complete than that usually found in literary colleges, the constant attention given this subject by all the departments, and especially the practice required in the printing classes, affords superior advantages to the student.

DRILL IN ENGLISH.

"As grammar was made after language, so ought it to be taught after language."—*Herbert Spencer.*

Drill in English embraces the following topics:

Sounds of the language; drill in producing the vocal, sub-vocal and aspirate elements with accuracy, distinctness and volume; vowels, consonants.

Letters: Form; power; rules for spelling, drill.

Words: Signification, properties, modifications, variations, relation and dependence.

Sentences: Drill in statement of ideas; description, clearness, terseness, vigor; business letters, discussion; capitalization; syllabication; punctuation; construction and analysis of sentences; elements, uses and names; criticism of compositions printed as written; proof reading; grammatical construction; superfluous words and clauses; drill in reading, speaking and penmanship.

Text-books: Webster's Academic Dictionary; Lee & Hadley's Advanced Lessons in Language.

Pupils deficient in spelling, etc., should enter the printing class, the printing-office being the work-shop of language.

STRUCTURE OF ENGLISH.

ELEMENTS OF WORDS.—The end aimed at in this study is to learn everything about words which will aid in their effective use. Among the topics included are:

Roots: What are they; their origin; their force and value as an element of language; the manner of their growth into different parts of speech.

Stems: Their derivation; their offices and properties; their relation to other parts of words.

Prefixes and Suffixes: The several sources whence derived; the relation of their force or significance to those sources; explanation of the laws and principles governing their use along with stems.

Compounds: Their value; their properties and uses; the laws governing their formation.

Synonyms: Definitions; causes of their abundance in English; the principles to be observed in choosing among them, to express a thought.

Criticism: This constitutes a prominent part of the exercises of the pupil through his whole course in the study of English. It not only diversifies and enlivens the class-room exercise, but reduces to practice the principles of the structure of the language. By this means, the student acquires not only a knowledge of English, but readiness and accuracy in speaking or writing it. The exercises in criticism embrace not only examination of selected matter, but original composition.

ELEMENTS OF SENTENCES.—The purpose in view in studying this subject is not to traverse the ground gone over in the study of grammar, but to fix in the mind of the student a clear understanding and remembrance of names, the properties and offices of the several classes of words entering into an English sentence, by showing him the reason of things; to make more simple, as well as interesting and practically useful, a study otherwise "dry and unprofitable" in many cases, by explaining the reason of the verbal forms and changes, the rules and maxims he is to remember and observe in his use of language. In the same manner he is conducted through a study of the mutual relations and dependencies of the several elements making up a sentence.

MATHEMATICAL DEPARTMENT.

Figures and lines, like words, are only instruments with which to convey ideas, or perform operations that cannot be easily done without them. The arithmetical principles used in business are few and simple; but accuracy and rapidity in computation are only gained by practice. College graduates often fail to retain clerkships, not because they do not know *why* given operations are performed, but because they can neither add, multiply or divide with that habitual correctness which renders their work reliable.

DRILL IN ARITHMETIC.

The chief design of this study is to make the student expert in the use of numbers, as employed by the industrialist for profit. The occupation of a successful farmer demands the application of every principle of practical arithmetic, and is taken as a starting point, rather than that of an abstract system. Beginning with a simple cash account, book-keeping is gradually developed to the full extent of its real utility. The areas of fields, expense of crops, construction of houses, sales of produce, and investment of capital, involve all the fundamental operations, and those of profit and loss, commission, taxes, insurance, exchange and stocks. Following this line, the student, so far from hammering away at "pure" science draws from the mathematical store-house what he needs, and sees why he needs it. Accuracy of calculation and posting, rather than a *mere* comprehension of the principles, is aimed at. Besides the recitation-room drill in business forms, practice in the field is also given. Estimating the number of cords in a pile of wood said to be 100x4x4 feet is one thing; measuring a pile of wood through which any number of cats may be harmlessly thrown, and in which four-feet sticks are the exception, is quite another and more difficult thing.

ARITHMETIC AND BOOK-KEEPING

Is a continuation of the above, having the same purpose and adopting such methods as the necessities of the class indicate. Thorough instruction in the principles and forms of business law is given. It will be seen that this method of teaching book-keeping, besides ensuring arithmetical practice, develops practical skill in that important art.

ALGEBRA.

Algebra is included in the course as a preparation for the study of Surveying.

DRAWING.

The practical value of Industrial Drawing can hardly be overestimated, first, because its study is the best drill for the development of the perceptive faculties, which are the ones most employed in daily life; and, second, because the working classes make a far greater use of lines than they do of figures. A farmer follows a line when laying a straight furrow; the carpenter uses the square and rule twenty times as often as he does figures; and a woman in cutting a pattern, or deciding that one bonnet is prettier than another, does so by the line or "form." So that either in its direct application, or in the exercise of that taste which comes from skill in using lines, this branch of mathematics is quite as important as a means of "mental discipline" as is the branch of computation, and is of far greater daily use. The admiral system of Prof. Walter Smith, Art Director of Massachusetts, is thoroughly followed through the grades of Free-hand, Geometrical, Object, Model, Perspective, Mechanical and Topographical Drawing, during the terms indicated by the Course of Study. In addition, constant practice in the application of lines to metal and wood is furnished in the Blacksmith, Carpenter, Turning, Scroll-sawing, Carving, Engraving and Printing shops, and to fabrics in the Sewing Department.

PRACTICAL GEOMETRY.

Not one farmer in a thousand ever uses the transit in surveying his land, the testimony of the county surveyor being decisive in court; but every farmer makes countless applications of lines and angles in laying off fields, roads, gardens, planning houses, determining levels, etc. The object of Practical Geometry is to teach the properties and uses of angles, and to make the student skillful in the application of lines to the field by the use of such simple instruments as are always within reach, or within his ability to construct; and accurate in the transferring of plans to the grounds, board or block.

PRACTICAL SURVEYING.

The drill in the use of figures and lines given by the mathematical course as above indicated, renders the mastery of surveying an easy task. There is no calculation made or formula used by the working engineer which cannot be readily understood and performed by a skillful arithmetician after proper instruction. The hand-book of the engineer is accordingly supplemented with such special guidance as is found necessary for a full comprehension of the mathematical principles and their applications; and extended field practice is required in the use of the compass, level, transit and theodlite.

STUDIES SPECIAL TO WOMAN.

Besides the studies already indicated, attention is called to the following:

SPECIAL HYGIENE.

As shown in the course, one term is devoted to the study of Physiology, from the text-book of Dr. J. C. Dalton. This is followed in the fourth year by a course of lectures to young ladies by Mrs. Cripps on the subject of Hygiene, embracing such instruction in hygienic matters as are valuable to woman.

FARM ECONOMY considers those affairs of the farm which usually come under the supervision of the farmer's wife or daughter, and which are not included in "gardening" or "household economy;" such as butter and cheese-making, dairy management, etc. A course of lectures is delivered by the Professor of Practical Agriculture. See heading, "Farm Economy."

GARDENING is included in Practical Horticulture. See heading, "Landscape Gardening."

HOUSEHOLD CHEMISTRY. See heading, "Household Chemistry."

HOUSEHOLD ECONOMY

Follows Household Chemistry and consists of lectures by Mrs. Cripps in the art of house-keeping, embracing cookery, domestic management, and kindred topics. Many elderly gentlemen sufficiently know, and more young gentlemen will duly discover, that systematic knowledge of how cooking ought to be done is luminously different from the ability to do it. Instruction without practice can effect but little. Accordingly a kitchen laboratory has been completely furnished, and affords every facility for drill in the art of cooking. This drill chiefly differs from that of a kitchen in the respect that after a girl has learned to wash dishes or pare pototoes she is not kept everlastingly at either. After full trial we have found it just as feasible to give this practice, with profit and pleasure to the pupil, as it is to give laboratory practice in chemistry—and no more expensive.

THE INDUSTRIALIST

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INDUSTRIAL EDUCATION.

Not the least of the things of which Kansas has a right to be proud is its magnificent educational system. At the start a wise and vigorous policy was adopted for the education of its youth; and ever since, whether in war or peace, poverty or plenty, the State has steadily developed and carefully fostered its various educational agencies. In addition to its munificent endowment of the public schools, it has provided higher institutions for three distinct kinds of instruction, namely, normal schools for the special training of public school teachers; a university for the education of those proposing to enter the professions of law, medicine or theology; and an agricultural college for the practical education of those who will engage in any of the "industrial professions or pursuits," as distinguished from the "learned professions." The relative demand for the three forms of education is indicated by the proportion in which the citizens of Kansas follow these vocations, as shown by the last United States census. Of every one hundred persons engaged in a vocation by which money is gained, the ratios were as follows:

Normal education:		
Teachers	1.13	1.13
Professional education:		
Ministers	0.43	
Lawyers	0.55	
Doctors	0.73	1.71
Industrial education:		
In agriculture	59.13	
In manufacturing and mechanical	14.63	
In personal service	13.89	
In trade and transportation	9.51	97.16
		100.00

AGRICULTURAL COLLEGE.

Recognizing the need for an education which should especially prepare the rising generations for an intelligent and successful practice of those vocations which are followed by ninety-seven out of each hundred of its citizens, the first institution endowed and put in operation by the State was its Agricultural College, so named because of the fact that agriculture is, both numerically and actually, the chief of these vocations. The title, "Agricultural" College, is apt to mislead those who are not familiar with the above fact, and also with the further fact that the acts of both Congress and of Kansas provide for an "industrial," as distinguished from a "professional" education.

ENDOWMENT.

The endowment received from the United States Government consisted of 81,601 acres of choice land, all of which had been sold at date of last report, except 31,461 acres now on the market. The proceeds from the sale of lands are invested in school bonds, and the securities in hand amounted to $238,101.28 by last report. The annual income from this endowment is about $20,000, out of which all expenses of instruction are paid. The only aid received from the State is for the erection of buildings, in accordance with the conditions of the congressional grant. This is the only one of the State's institutions which is not dependent upon the tax-payer for its maintenance.

LOCATION.

It is situated one mile from Manhattan, Riley county, one hundred and twenty miles west of the Missouri River, in the heart of the finest agricultural State in America. The Kansas Pacific Railway, with its connecting lines, gives speedy communication with every quarter.

COURSE OF STUDY.

The course of study is shaped with direct reference to giving an industrial as distinct from a professional education. It makes the pupil intelligent and expert in the use of the English language; in the use of numbers as employed by the farmer, book-keeper and engineer; and in the use of lines as employed by the carpenter, painter and architect. Words, figures and lines are tools which all men use. It then gives thorough instruction and laboratorial or field drill in the following sciences as essentially useful to an intelligent and successful farmer: Physiology, Practical Agriculture, Natural Philosophy, Botany, Entomology, Practical Horticulture, Landscape Gardening, Inorganic Chemistry, Organic and Analytical Chemistry, Surveying, Geology, Mineralogy, Zoology, Meteorology, Agricultural Chemistry, Political Economy, Practical Law and Logic. It has an equally practical and effective course for the education of woman as a woman, instead of as a man, and as a worker instead of as a butterfly. Then, it has a well-stocked farm and nursery, and well-equipped shops, for giving boys practice in farm and nursery work, and in wood and iron work, and for giving girls drill in dress-making, printing, telegraphy, carving, engraving and music.

Cattle.

Kansas as a Stock-Raising Country.

Although Kansas "beats the world" in raising wheat, there is much doubt among our farmers as to the advisability of making this the leading industry of the State, because it "wears out the land," while stock-raising does not. The fame of the "blue-grass region" of Kentucky for fine stock is world-wide; and yet, as we have always contended, Kansas is just as good a country for stock-raising as the "blue-grass" district, and only needs to have the same care given to the business to make the State as famous for her fine cattle as she is now for her fine wheat; and the experience of all stock-growing countries goes to show that there is more profit in raising stock than in any other kind of farming. The great trouble heretofore has been that the farmers, not only of Kansas, but of every other western State, have paid no attention whatever to the *quality* of the stock raised. Thorough-breds cost a little more at the start than inferior animals, and hence it is that our prairies are filled with "scrub" stock, filling the place that might just as well be occupied by the best blooded animals — animals which, after they are purchased, and a start has been made, would not cost one cent more to raise and tend them than the poorest that are to be found, and yet a blooded cow or steer, when ready for market, will command fully twice as much money as the "scrub." The familiar motto that the publishers of Webster's Dictionary always put at the head of their advertisement, ought to be painted in large letters upon the gate-posts, barns, stables and sheep-sheds, of every stock farm in Kansas — "*Get the best!*" And every farm should be, to some extent, a stock farm — to the extent that there should never be a bushel of corn, in the form of corn, sent to market; all the surplus should be consumed on the farm, and marketed in the form of pork and beef, since in this way the farmer, even though living a long distance from market, can realize a fair living price for the product of his fields. But the most important part of cattle-raising is to raise *good* cattle; and the only extra expense attending this is in the start; when good stock animals are secured, the cost of breeding and raising is less than in the case of "scrubs," for a thorough-bred steer, while he will bring in the market from seventy-five to a hundred per cent more than a "scrub," will not represent as much corn as the inferior animal, for it is a well-known fact that the thin, long creatures, always make up in appetite what they lack in flesh. Since a man only needs to start once, in stock-raising, it is a matter of the greatest importance to him that he start right.

We had the pleasure, a few days ago, of witnessing a practical demonstration of the facts referred to above. By the courtesy of Gen. J. C. Stone, of Leavenworth, we were favored with a delightful ride to and over the stock farm of his son, J. C. Stone, Jr., about four miles from the City. Mr. S. is a young man of twenty-two years of age. A little more than three years ago, fresh from Yale College, and without any knowledge of rural work from practical experience, he took his present place and went to work to "make a farm." The tract consists of three hundred and fifty acres, and at the time he took possession of it fifty acres were suitable for pasture, and all the rest was covered with heavy underbrush. The whole place is now cleared except one field of thirty acres which is being cleared off, and is all devoted to pasture except fifteen acres in wheat. He gives his attention exclusively to live stock, and buys his corn, for feeding, from his neighbors — is at present paying twenty cents a bushel, delivered in his cribs, and has more offered at that price than he can take. He has demonstrated by experience that his land pays him a much better interest, when devoted to pasture for his stock, than in corn at twenty or even thirty cents a bushel; hence, he saves money by buying his corn instead of raising it. He has built a house for farm hands, put up cribs, barns, stables, etc., without other help than that of the men employed at the general farm work, and has himself made or directed every improvement by which his place has been converted in three years from a thicket to a model stock farm. And what is most important of all, when he concluded to go into stock-raising he determined to commence *right*, and therefore procured only the very best animals. He has now between three hundred and four hundred sheep, all of the best blood, and which yield him as high as thirty pounds at a shearing. His hogs look exactly like those pictures of mammoth animals which you see so frequently in the agricultural papers, but so rarely meet with in "real life" in the West.

He has about one hundred head of cattle, all of the best pedigrees, and of marked individual excellence, representing thirty-five high grades. As a sample, we may mention a steer, which at the age of a year and ten months, weighed fifteen hundred and twenty pounds.

We have been thus particular in calling attention to this farm, in order to show what any young man, with a very little capital, and a good stock of energy and "grit," can do in Kansas; for Mr. Stone had no more knowledge of the business when he commenced than any other young man may be supposed to have when coming out of college, but he applied himself to his pursuit with a determination to succeed, and the result is that he is already comfortably well off, though just starting in life. The secret of his success, and the reason that the animals on his place are now worth many thousands of dollars instead of a few hundreds, is that he *started right*, and bought thorough-bred animals, though he had to pay good round prices for them, instead of stocking his place with "scrubs" because they were cheap.

A great many farmers think if they have a few cattle, a few hogs, and perhaps a few sheep, that they are doing all they can in the way of stock-raising, and the quality or "blood" of the animals is a matter that has probably never entered their thoughts at all. Yet this is a point that ought to receive their first consideration, for it is a matter of the first importance. And the fact that so little attention is paid to this important point, is the reason why we so frequently hear men say, "Farming doesn't pay." True, some kinds of farming do not pay, and here is one of the reasons: Nearly every farmer in Kansas raises a little live-stock. During the last week in November last, we find that the quotations for what are called "good shipping cattle," weighing from 1,150 lbs. to 1,450 lbs. in Chicago, — which would be equal to 1,200 lbs. and 1,500 lbs. on the farm, were from $3.75 to $4.00 per hundred. During the same week Mr. Gillett sold his lot of steers — two hundred head, we believe,— for $6.50 per hundred weight on the farm. That is to say, for each pound of beef sold by him he received two and a half cents more on the farm than his neighboring farmers received for theirs after it reached Chicago, making a net difference of not less than 2¾ cents per pound, or $42 on each steer weighing sixteen hundred pounds. For every 1,600 pounds of gross beef, Mr. G. received $104 on his farm, while his neighbors, for a like number of pounds, received from $60 to $68, delivered in Chicago. This is a very great difference, and one such circumstance ought to be sufficient to open the eyes of Kansas farmers to the fact that it is a ruinous mistake to keep inferior cattle. There is not a farmer in Kansas who cannot raise just as good cattle as those referred to above, and raise them just as cheaply as he can raise inferior animals, if he will only start right. Let him sell off all his "scrubs" and buy a few well-bred cows; they will cost him a little more than the others, to be sure, but the return he receives is much greater in proportion to the amount invested. Then if he cannot afford to buy a bull, let him club together with some of his neighbors, or let one buy a good animal and keep him for the convenience of the neighborhood; but, above all, don't let your cows, whether good or poor, run to any poor "runty" creature that chances to find them on the prairie. A well-bred cow will eat less than a "scrub," and their calves will always bring from two to five times as much; and it is vastly better to buy a good bull, guaranteed by some reliable dealer, than to take an indifferent animal as a gift. A just appreciation of these facts fully explains why, in the experience of so many persons, farming does not pay. It is just like any other business — it pays to do it well, but it does not pay those who let every thing go at loose ends, and "trust to luck." Live stock may be made by far the most profitable branch of any farm in Kansas, if the farmer will breed and handle the best stock, but there is no money in "scrubs." — *Western Homestead.*

THE following resolution was adopted at the semi-annual meeting of the Kansas State Horticultural Society and indorsed at the last annual meeting of the same, namely:

"*Resolved*, That the boards of school districts be urged, through the county vice-presidents, to adopt necessary measures to plant the school grounds to groves of trees for shade in summer and shelter in winter, and so to ornament the house surroundings as to make the whole place attractive to the pupils; also, to urge upon the members of the school districts the importance of an introduction of a course of lessons in practical horticulture in our common schools."

More Legs, Less Wheels.

Farmers are fast learning the lesson that four feet are better than two wheels; that a good way to market grain is to walk it to the purchaser; that corn put on legs is enhanced in value; that true economy is practiced when only the valuable portion of a crop is put upon the market, and when that crop is put into meat, or its condition is such as will, by one other step produce it. Again, the raising of cattle, swine, sheep and horses precludes the necessity for so much of machinery and expense in preparing for the harvest, and leaves the soil richer and the owner more of a profit.

We now ship slaughtered meat across the ocean; bear that in mind; it is no guess work, we can do it; and the demand for accommodations to do it extensively will make the facilities forthcoming. Instead of sending the corn, oil cakes, and other products that England buys to feed her cattle in its bulk condition, let us concentrate it all in the animal, and then send the carcass only, thus furnishing at the least possible expense the meat which they make so attractive a market for. They want good beef, will pay for it, and of this fact let breeders make a note. It costs no more to send sweet, tender and desirable meat than its opposite, and it will command a much larger price. There is no limit to the demand, and the improvement in quality will only add to the consumption and the consequent amount required.—*Exchange.*

THE INDUSTRIALIST.

SATURDAY, JANUARY 4, 1879.

JNO. A. ANDERSON, Managing Editor.

ASSOCIATE EDITORS, MEMBERS OF THE FACULTY.

THE newspapers of the State will confer a great favor upon us by giving the following notice a place in their columns:

The present term of the Agricultural College began Friday, January 3d, 1879. Tuition absolutely free. Students can enter at any time, if able to pass an additional examination upon the subjects studied by the classes which they expect to enter.

A Wrong Somewhere.

As a rule, labor in the form of manufactured articles commands a better price than in the form of personal service. When buying butter, the merchant does not pretend to offer less because a woman, not a man, made it; though, in employing a clerk, he pays less salary to the woman than to the man. And it is notorious that school trustees, even when fully satisfied that a given female teacher will do as much work as a given man, and do it as skillfully, faithfully and efficiently, have no hesitation whatever in placing her salary anywhere from twenty to sixty per cent lower than his. Whereupon, we all incline to take the part of the defenseless girl against the grizzly old bears. But, is it the bear's fault that female teachers can be obtained at less rates than males? And if, instead of buying the services of teachers, the bears were buying lumber for a school-house, would they, as honest expenders of the public money, have a right to pay one hundred dollars per thousand to one dealer, when they could obtain as good an article from another at eighty dollars or sixty dollars per thousand? Let us be just to the shaggy monsters.

There is evidently a wrong somewhere, and one that should be righted; but doing another wrong will not increase the general stock of righteousness. And, besides, the superintendents of telegraph, railroad and manufacturing companies do exactly the same thing, for precisely the same reason; and we cannot reach them through the ballot-box, as we can the trustees. The job may be greater than our ability. This wrong exists in the fact that, as a result of our educational system and of public sentiment, there are fewer things which women can "respectably" do than men. Hence, they press into just such vocations as that of the teacher, and, by competition with each other, lower the price of such labor. Were the carpenter's wages cut down, by an oversupply of craftsmen, to three dollars a week, he could earn more as a farm hand or a breaker of stone; and would act accordingly, as would others, so relieving the pressure. But the avenues for paying labor for woman are very much fewer than for man. A steady throng empties into them from the homes, schools and colleges; year by year they grow more crowded and dense; and the pressure, little by little, but always increasing, forces the weaker ones out into the side-streets of toil, off into the alleys, down into the cellars, up into the attics of labor: and then, though they poise on the outer edge of temperance, honesty and chastity, to tremble in sheer horror at the yawning abyss; though they cry in agony to a God who seems not to hear, and to men who more than seem not to care; inch by inch, yet always onward, they are resistlessly impelled and finally toppled into hospitals, jails and brothels.

Most unquestionably is there a terrible, red-hot wrong, somewhere, somehow, and all the time! Yet, there is no use in fighting against the unchangeable laws of nature; and no possible way of escaping their penalties, save by obeying the law; in this case, the law of supply and demand of labor. The fact that an article commands a better price than does personal service, is just as true of those vocations requiring manual skill. The printer produces a column of matter ready for the press. It is wholly immaterial to the employer whether a woman or a man set the type; and he pays therefor upon the basis of the market price, not that of sex. Telegraph companies, on the other hand, take sex as their basis; and properly, too, since women will work for less than men.

Ceramics.

Addison said, over a hundred and fifty years ago, that there was no inclination of woman that more surprised him than the passion for chinaware. He heartily laughed at the imaginary picture of an old lady of four scores cleaning and hugging the image of an Indian mandarin with as much affection as her great-granddaughter would display in kissing her baby. Yet, it seems that china vessels have been playthings for women of all ages, and that even men have been affected by their attractions. Of Horace Walpole, it was said:

> "China's the passion of his soul;
> A cup, a plate, a dish, a bowl,
> Can kindle wishes in his breast,
> Inflame with joy, or break his rest."

With many the reason for such a passion may consist, perhaps, only in the influence of a prevailing opinion; while others see, in the fine shape and indestructible glaze of these metals, an object of art. Those who read the history of art-loving France will find in its pages many illustrations of the bewitching power of this peculiar earth, and will learn that kings have bought such treasures with their weight in glittering gold. Whether the desire to possess any piece of art can justify such eccentricity, is difficult to decide; but something can be said of the mania for imitating these treasures, by pasting upon ginger jars an indiscriminate collection of cheap and towdry pictures, in order to pass them off as oriental or ancient pottery. This mania is just now raging furiously in our country. Starting at the Centennial, somewhere near the Chinese department of ceramics, that "art" has ever since deluged the United States. Like the polar wave of last month, it spread from ocean to ocean; and Harper's *Weekly* says that "it even reached Blackville."

When we see our parlor shelves and tables covered with these ugly counterfeits, and know that out of regard to the feelings of the rising generation of artists, these must be pronounced as genuine, or at least as very artful imitations, we are in danger of wishing that all pottery could be buried so deep that even the indefatigable Dr. Schlieman could not unearth it. If we stop short of wishing this, it is only because we know that after a term of Vishnu's rule, the government will naturally fall to Shiva.

Nothing that is false is artistic. Decorated ginger-pots are in truth but ginger-pots; blacking bottles cannot be forced upon the world as Etruscan vases or Chinese porcelain. A certain amount of falsity is conventionally accepted, such as sheet-iron architectural ornament, for instance; but when an object is diverted from its recognized use, especially if that use be humble, the deception repudiates itself. If we are of the less favored class, and cannot afford to possess such treasures of art as our heart would delight in, we must do as we have to do elsewhere,—go without them.

The pity of this mania is that so large an amount of the female energy in the world, seeking an outlet, finds it in such a way. Acknowledging that this labor is not altogether lost; that it, like all other work that is meddling to any degree with art, tends to increase taste; we certainly agree that the time could be employed to more advantage to the individual as well as to the world at large. And taste could be exhibited by our ladies more profitably, and with less danger of appearing ridiculous in the eyes of those who are better educated, by practicing the almost lost art of sewing.—*J. D. Walters.*

Tact, Pluck and Industry.

Many practical farmers who have made a success of the business of farming, by making a business of it, and conducting it in a business way, attribute their success in most cases, to their untiring industry, whereas, their natural business tact had very much to with it. They thought out their work while others slept, and energetically worked out their well-matured plans. They had a definite system for doing everything. This once fixed, they stuck to it. If one crop was low this year, they did not abandon it for another, but carried out their plan of growing a proportionate amount each season of the staple crops, making every possible effort consistent with economy to increase the average yield. If pork was low, and worth but $2.50 to $3.00, they did not abandon it and begin to ship their corn to distant markets, paying high rates of transportation, realizing from twenty to thirty cents a bushel—less freightage, leakage, ratage and shrinkage. If beef, mutton, wool, butter, or cheese were low, the usual amount was raised for all these articles are wanted, and they will as a rule, take it one year with another, bring a fair price in proportion to the time, labor, skill, capital and intelligence required to produce them. There is evidently no method by which the prices of farm products can be regulated except that of supply and demand. On the farm, as well as in the city, in the field, or office, three things are invariably requisite to insure success, to-wit: Tact, pluck and industry.—*Grange Bulletin.*

Home Industry.

The people of Kansas cannot overestimate the importance to us, as a State, of starting, encouraging and building up in our midst, all kinds of manufactures. We have the facilities for making nearly everything we need, just as successfully and as cheaply as the same articles can be made anywhere, and every dollar that we spend for home-made goods, instead of foreign-made goods, is just so much money saved to the aggregate wealth of the community. It is a matter of interest, as well as of duty, to all of our people, to do all they can to foster and build up home manufactures, and it is also a matter of interest and duty as well, to the press, to break down the prejudice that exists in the minds of so many people against anything that is home-made. A great many people—who always betray a decided tinge of "shoddy"—will pay more for an inferior article that is "imported" than for a superior article home-made. This is all wrong; it is not only bad in principle, but is injurious to the interests of all classes, for it is money in the pockets of all of us to have our home institutions.

A foundry or a woolen factory, or any other establishment that has for its object the manufacture, in our midst, of articles that we should otherwise be obliged to procure from abroad, is not only profitable to the owners and operatives of the mill, but its benefit is felt, more or less, by every other member of the community; by furnishing employment to men who would otherwise seek locations elsewhere, it makes more customers for the merchant, more clients for the lawyer, more patients for the doctor, and, in short, more business for everybody. The meanest man in the world can't possibly run an establishment in which it is necessary to employ help without sharing his benefits with everybody in the community.—*Western Homestead.*

JAPAN is the only country in the world in which gentlemen are not farmers. The farms there are very small, and are worked entirely by hand. On most of them, no animals are kept.

The Times Still Ahead.

A statement showing the amount of postage paid by the different daily newspapers of Kansas.

[From THE TIMES, Nov. 28, 1878.]

It is the plain duty of THE TIMES to give the public, and particularly our advertising patrons, the facts concerning its circulation, in order that they may fully appreciate its value and importance as an advertising medium.

The surest way to obtain the exact circulation of the papers of the State outside of the counties in which they are published, is from the amount of postage paid by them to the Post-office Department.

Below we give the amount paid by THE TIMES, taken from the post-office receipts of this date.

The amount paid by other papers in the State is taken from the Atchison *Champion*, which claims to have the amount from official sources, and being published in its columns is evidence that it accepts it as correct so far as it is concerned.

THE TIMES, Leavenworth, Kansas	$882.96
Champion, Atchison, Kansas	336.36
Commonwealth, Topeka, Kansas	302.12
Patriot, Atchison, Kansas	112.26
Blade, Topeka, Kansas	107.36
Public Press, Leavenworth, Kansas	102.00
Monitor, Fort Scott, Kansas	73.40

From the above it will be seen that THE TIMES pays more than double the postage of any other daily paper in the State.

THE TIMES pays more postage than any other two daily papers in the State.

THE TIMES pays more postage than any other three daily papers in the State.

THE TIMES pays more postage than any other four daily papers in the State.

THE TIMES, after deducting the amount paid for postage by all the other daily papers in the State upon their exchange list, *pays more postage on its bona fide circulation than all the other daily papers in Kansas.*

THE TIMES has a circulation in the county of Leavenworth on which no postage is paid twenty times greater than any other paper in Kansas.

THE TIMES is this day enlarged four colums, and in addition to being the cheapest and best paper in Kansas, is the largest. Its State News department is alone worth the price of subscription, and is a special feature of the paper, which commends itself to those who desire to keep posted in regard to items of interest in Kansas.

THE TIMES is pre-eminently a newspaper, and with its new and increased facilities and additional editorial force, will command a place in every household in Kansas.

DAILY TIMES, per annum	$8.00
WEEKLY TIMES, per annum	1.25

Advertising rates reasonable.

Address D. R. ANTHONY,
Leavenworth, Kansas.

THE INDUSTRIALIST.

SATURDAY, JANUARY 4. 1879.

We have not had time to prepare the list of names for publication this week, but will insert them in our next issue.

Despite the cold weather, Messrs. Kinsey and Ayres have kept at work on their new house, which will be completed next week.

We see by the *Enterprise* that the thermometer on the top of Pike's Peak has indicated thirty-seven degrees below zero this winter. We pity the thermometer that has to register that kind of weather.

The Webster Society has succeeded in engaging Noble Prentis to lecture in Manhattan sometime this month, probably on the evening of the 18th. It is not yet known whether Prentis will talk to us about "Funny Americans" or read that other new lecture, which he is just completing.

The last three days have been the coldest of the season. The thermometer has been as low as fourteen degrees below zero, which is pretty cold for Kansas. The students who are coming in report a much heavier fall of snow in other parts of the State than we have here. In some of the counties south of us, the snow is said to be two feet deep.

The winter term of the College commenced on Friday morning. One hundred and eight students were enrolled the first day. But few of those who went home to spend the holidays, were present on the first day. Some of them will come in to-day, and others will not return before Monday. The attendance this term will certainly exceed that of last term.

Mr. Walters says that, according to private letters which he has received from Switzerland, the winter must be very severe over there; and this, in connection with a general stagnation in the watch and silk manufactures, causes great suffering among the working classes. Thousands are looking toward the United States as their land of promise, and are ready to risk the voyage next spring. Let them come.

Mr. J. E. Shortridge, an old resident of this county, died last night, at his home in Manhattan. For over a year, Mr. S. had been suffering with a disease which he contracted while working in the lead mines in Missouri. Everything which could lead to his recovery was done, but it became evident at the first that he would not get well. The funeral services will probably be held to-morrow (Sunday) afternoon.

The Alpha Beta Society met Friday afternoon, for the first time this term. The members in the Society seemed quite enthusiastic in the consideration of their work for the term. The following officers were elected for the ensuing half term: President, Wm. H. Sikes; Vice-President, Gus Platt; Secretary, Miss Sickels; Treasurer, Wm. Rose; and with a perversity which is becoming worse and worse, the undersigned was elected to the office of Marshal. Arrangements were made for debate next week on the following question: "In justice and equity, should the national war debt be repudiated?" Editors were appointed for the *Gleaner* for next Friday, so that by that time the Society will be prepared to entertain visitors in the very best possible style. New students are especially invited to come. BLAIN.

Through the kindness of Mr. John Mann, one of our students, we are permitted to print the following extract from a letter which he has lately received from Mr. Joseph Davis, our former janitor. The letter is dated San Luis Obispo, Cal., Dec. 23d, 1878. Mr. Davis lived so long in Manhattan, and was so widely known and respected, that his testimony in regard to California will be readily believed:

"When I left Manhattan for the Pacific Coast, I went by way of Kansas City. Spent one day and night there with friends, then stepped on board the train, which in due time landed us at Council Bluffs. In a few hours, we were steaming away for the coast. Had fine weather all the way, and enjoyed the trip very much. Stopped in San Francisco and Oakland with friends one week, then boarded the steamer Senator and sailed southward two hundred miles to San Luis Obispo. All went well.

"People here on the coast all agree in saying that times are hard, and it is somewhat difficult for strangers to strike any paying business unless they have money. There are more men here wanting work than can get it, and more applicants for schools to teach than there are schools. Men may rent or buy land and go to work if they choose to do so. Good land in this country sells high. I have bought a home near San Luis Obispo, and have gone to work on it; and as yet I have no reason to regret my change to my new home in the West. The climate is lovely. There have been some frosts since I have been here, and the people say this is as cold as it gets."

WHY HYGIENE SHOULD BE MADE A SPECIALTY BY WOMAN.

Human hygiene treats of the manner of keeping the different parts of the body in the best condition for appropriate use. The body should be supplied with the best qualities of air, water and food, as these are the producers of good blood, and without good blood the body works as a machine improperly made and handled; for machinery, if properly made and handled, will work until it is worn entirely out. Thus it is with the human body, the greatest of all mechanisms. It, too, follows the great law; the more equally and regularly it is worked, the longer it will last.

The evils which cause lassitude, sickness and death to very many are without number. If vegetables are allowed to decay in the cellar beneath the living rooms, sickness is almost inevitably the result. The soil upon which the dwelling is built may be loose and porous, and may be situated so as to receive all the impurities from surrounding objects, by drainage or by the winds. The family diet should receive due attention. Mothers, by understanding the principles of hygiene, will administer to their children such foods as they know are wholesome and healthy. Food is the most important of our wants; we cannot exist without it. The woman that makes hygiene a study can select and prepare food in such a manner that, when eaten, it will yield the most nourishment. Food is to the physique what education is to the mind; good and well-prepared food beautifies the physique just as a well-directed education beautifies the mind.

Disagreeable habits often injure the health; as ways of sitting, standing or walking. It is very easy to form a disagreeable habit, but not so easy to drop it; and if mothers do not keep watch over their children, they will form habits that they can not forsake without a terrible effort. The mother has much more to do than the father with the bringing up of the children, particularly in early life; how necessary it is, therefore, that she be well informed on all things pertaining to health. A great responsibility rests upon the mothers of this country. Women and children are suffering more than men from household errors, because they spend so much more time within doors. No doubt some of the ailments which are attributed to sex and education are far more due to the contaminated air which is found within the house. Day after day and week after week, there is a trespass on vital force until a pale face, or a narrowed chest, or a consumptive cough, tells that the foundations of vigor are being sapped. We want pure soil, pure air, pure water, good food, and then it is wonderful how much the human system can resist and endure. But these are the cardinal virtues of the physical structure, and perilous is that home which has them not.—*An essay by a member of the ladies' class in Special Hygiene.*

NATIONALIST ITEMS.

Passenger rates on the Kansas Pacific Railway have been reduced to four cents a mile.

Albion Hoar, of Deep Creek, has caught four beavers since the freeze, one of them weighing seventy-five pounds.

Senator Dow's family is to move into town in a few days, and will occupy Mr. R. Blood's house on the south side of Poyntz avenue, lately occupied by Mr. Drew.

Although the Congregational Church is not finished, yet it can be made warm and comfortable, and while the seats are being made, service will be held each Sabbath.

It is expected that Francis Murphy, the great temperance apostle, will visit Kansas some time this month, and speak at six or eight places. And we are authorized to state that if he does, Manhattan will be one of the number.

The regular meeting of the Riley County Horticultural Society will be held in the horticultural room, at the College, the second Thursday in January, 9th inst., at two o'clock P. M. Subject for discussion—"The winter care of the Orchard and Garden." A full attendance is desired.

ENTERPRISE ITEMS.

The mercury stood fourteen degrees below zero yesterday morning. Sunny Kansas is spreading herself.

The nimrods of Ashland had their annual hunt the other day. The winning party scored over 1,500, while the losing party made in the neighborhood of 1,300. We will publish the score next week.

One evidence of the return of good times is the introduction of a new furniture store by J. B. Wadleigh. He is now located at the old Tyler lumber yard, which he has purchased, and has put in a full stok of furniture, which, with his lumber, he will sell at just enough below cost to make a living profit.

Mrs. Lewis, of Blue Bottom, has purchased a Paris Royal Range of Zeigler, and is authority for the statement that it is the best cook-stove she has ever used, during many years housekeeping. It saves the weary housewife many hundred steps, and is indeed a thing of beauty and a joy forever.

The study of the English language has become a passion among the intelligent natives in India. Their mastery of it is wonderful. Here is a specimen: "Honored Sir:—Having been amputated from my family for some years, and as I have complaints of the abdomen coupled with great conflagration of the intervals, and prostration of all desire for work, with also the disgorging of my dinner, I hope your highness will excuse me attending at orderly room for ten or nine more days, and in duty bound shall forever pray for the salubrity of your temper and the enlargement of your family.—The Commanding Officer."

DIRECTIONS TO APPLICANTS.

TERMS OF ADMISSION.

Candidates for admission must be fourteen years of age, and pass a satisfactory examination in reading; arithmetic, through decimal fractions; and English grammar, to syntax. Classes are started at the beginning of each year in Drill in Arithmetic and Drill in English; and the pupil must have the knowledge above indicated, else he will be unable to retain position if admitted.

Pupils will be received at any time during the year, if able to pass an additional examination upon the subjects studied by the classes which they expect to enter. But they will find it greatly to their advantage to be present at the opening of each term, or as soon thereafter as possible.

GRADES.

Both the Literary and Industrial recitations are graded daily upon a scale of 100; and an examination of all classes is made at the close of each month. A student not attaining an average grade of sixty is promptly dropped to a lower class, or excluded from the Institution until able to do so. The work of grading is strict and uniform in all the departments, and this process is rigorously used for sifting out incompetent and indolent pupils; thus more than accomplishing all that is designed to be effected by a "high standard of admission." Hence, the student's continuance in the College wholly depends upon his own action.

The course is based upon the determination to make the labor required in the preparation of one industrial and three literary recitations as much as the average student can perfectly perform, in ten hours a day. We design to give the pupil the worth of the time expended at College; and, in order thereto, he must do a full day's work with brain or hand. Only those students who can maintain a standing of ninety in each study will be allowed to take more than the prescribed number of recitations; and no one will be permitted to have less than one industrial and three literary recitations.

RELIGIOUS.

Unless otherwise directed by parents, students are required to attend chapel at 8:30 A. M. on academic days, and divine service once every Sabbath.

EXPENSES.

There are no charges whatever for enrollment, attendance or instruction in the regular courses; nor are there any "contingent fees" for the repair of buildings, for the use of books or apparatus, for diplomas, or the kindred privileges usually grouped under the term "contingent." Male students are furnished instruction, the use of apparatus, instruments or tools, in both the literary and industrial classes marked out for them, without any charge. And the same is true of female students in the regular classes provided for them. Printing and Telegraphy are industrials primarily provided for the education of female students, and male students taking either of these are charged $1 per month for use of instruments.

Instrumental music is a fine art or "accomplishment," rather than a mechanical art. We do not place it among our "industrials" in the same sense, or for the same purpose, that we do those provided for teaching the trades. Accordingly, a fee of $12 per term, or seventy-five cents per week is required from female students for tuition and the use of pianos or organs.

The only charge made for material in either the literary or industrial departments is for the chemicals used by students in laboratory practice, which are furnished at wholesale prices, and amount to but a small sum.

Furnishing an absolutely free education is as much as can be reasonably asked; and the Institution neither boards, clothes, nor supplies the student with text-books. Boarding can be obtained in private families at from $2.75 to $4 per week. Washing costs from seventy-five cents to one dollar per dozen. Text-books, which can be procured in Manhattan, cost from $2 to $5 per term.

No student need expend over $5 per week; and many of our best pupils are living at $1.25 per week. Students desiring to "board themselves" can do so at from $1 to $2 per week. In a club of four young men, renting a house, the average cost to each for the term was $1.11 per week.

LABOR.

Manual labor by the students may be for either of two purposes: First, to acquire skill in a given art; second, to earn money. In the first case, the labor is educational; in the second, it should be paid for by the party benefited.

Educational Labor.—Manual labor in the reciations of the Industrial Departments, like mental labor in those of the Literary Departments, is purely educational and will not be remunerated. While the interest of the student will be held paramount in the direction of this labor, the practice necessary to dexterity will be required.

Remunerated Labor.—When the Institution needs labor on the Farm or elsewhere which is not educational, but simply for its own profit, and which a student is able and willing to perform, it becomes an employer instead of a teacher, and he an employe instead of a scholar. It pays for work, he works for pay. The relation between them is commercial, not educational; and both parties must act upon business principles. Hence, the College furnishes only such employment as its own interests require, and will pay according to the value of the service rendered at from seven to ten cents an hour.

AMOUNT EARNED.

It is impossible to predict how much a given person can earn, since that depends upon what he can do and what work there is to be done. Hence, it is wholly impossible for us to answer the question so often asked: "Do you think I can meet my expenses by work?" Some students make one-half their expenses, some the whole, and exceptional men have made more than expenses. As a rule, a faithful boy skilled in farm work can earn half his expenses on the Farm or in the Nursery. During the year he can ordinarily acquire sufficient skill in the wood or iron shops to enable him to make articles for sale. The whole question is one for his own consideration and decision. We can teach all who come, but cannot absolutely *promise* anything more. Hitherto we have refrained from holding out strong inducements respecting the amount of labor we might have to offer; but in view of the fact that during each of the last three years we have had more to do than the students could perform, we are inclined to give greater and positive encouragement on this point. Any boy who is in dead earnest, who is familiar with farm operations, and who can raise $50 to start with, should be able to carry himself through the four years' course. And certainly this places an education within the reach of every determined boy. As yet we are unable to offer similar advantages to girls, not requiring labor in the College departments which they can perform.

RULES.

1. Behave as a true man or woman should, at all times and in all places.

2. Attend to your own business promptly, thoroughly and courteously; and vigorously let alone that of other people.

3. Penalty: "Leave!"

PUBLICATIONS.

The "Hand-Book," published in 1874, containing a full discussion of the educational question and the aims of the Institution, will be forwarded to any one desiring it.

THE INDUSTRIALIST, a weekly journal edited by the Faculty and published by the Printing Department, contains original and seasonable articles on the Farm, Orchard, Trades, Sciences, and Education. Price, 75 cents a year. Address A. A. Stewart, Manhattan.

CALENDAR.

Winter Term 1879.—Begins Friday, January 3d, 1879.

TO NEW STUDENTS.

Bring the text-books you have been using. On arrival, first arrange for your boarding. A. A. Stewart, Sup't Printing Department, will furnish information, either by letter or on application, concerning boarding places or rooms for rent. Report to the President at 8:30 A. M., immediately after chapel, for enrollment.

For further information apply to Jno. A. Anderson, President, Manhattan, Kansas.

LITERARY SOCIETIES.

ALPHA BETA.—Chartered, December 26th, 1870. Meets in College building every Friday at 2 P. M. Ladies admitted. New students cordially invited to attend. C. J. REED, President.
MISS MARY CLARKE, Secretary.

WEBSTER.—Chartered, January, 1871. Meets in Telegraph Hall every Saturday evening. Visitors, especially students, always welcome.
C. M. HULETT, President.
H. C. RUSHMORE, Secretary.

RAILROAD TIME-TABLE.

KANSAS PACIFIC RAILWAY.

PASSENGER ARRIVES.

No. 2, going East	11:14 A. M.
No. 4, going East	3:47 A. M.
No. 1, going West	5:10 P. M.
No. 3, going West	4:33 A. M.
No. 7 (freight), going West	8:15 A. M.

Nos. 1 and 2 run daily; Nos. 3 and 7 run daily except Monday; No. 4 runs daily except Sunday. Passengers with tickets are carried on No. 7.
GEO. C. WILDER, Agent.

KANSAS STATE AGRICULTURAL COLLEGE.

FACULTY.

J. A. ANDERSON, *President, Prof. Political Economy.*
M. L. WARD, *Prof. Mathematics and English.*
G. H. FAILYER, *Prof. Chemistry and Physics.*
E. M. SHELTON, *Prof. Prac. Agricul., Sup't Farm.*
H. E. VAN DEMAN, *Prof. Botany and Horticulture.*
J. E. PLATT, *Prof. Elem'y English, Mathematics.*
JNO. D. WALTERS, *Teacher Industrial Drawing.*
HON. D. J. BREWER, *Lecturer on Practical Law.*
T. T. HAWKES, *Sup't Mechanical Department.*
A. A. STEWART, *Sup't Printing Department.*
W. C. STEWART, *Sup't Telegraph Department.*
MRS. M. E. CRIPPS, *Sup't Sewing Department.*
W. L. HOFER, *Teacher of Instrumental Music.*

INDUSTRIAL EDUCATION.

The real value of an education to the student depends upon two things: First, the practical worth of the knowledge taught; and, second, the degree in which he makes it his own. Hence, the ability of any institution to give a practical education depends upon the kind and aim of the knowledge it teaches, and upon the thoroughness of the instruction therein. The State Agricultural College was directly endowed by Congress, and is guided by the State, for the specific purpose of furnishing to the industrial classes of Kansas a "practical" education, that is, "one fit for use." As its name indicates, and as the statistics of the industries of the State require, its chief work must be that of giving a useful and usable education to those who will engage in farming; and, therefore, the Farmer's Course must, from the nature of the case, be its main one.

FARMER'S EDUCATION.

Words and figures are merely instruments with which to record ideas. They are not themselves ideas, nor should they be made the chief end of an education. As a wagon is necessary to haul grain, so are they a necessary part of an education; but as the wagon is not the grain, so they are not the knowledge which the farmer converts into money. Hence, the classics and higher mathematics are not taught. But it will be noticed in the following course that so soon as the pupil acquires working skill in the use of the English language as a tool, and of figures and lines as mathematical tools, those arts and sciences which present knowledge that has a cash value to the farmer are taught as rapidly as their importance and thorough acquisition will permit. Studies numbered (1) and (4) in the second, third and fourth years are the spine of the course, to which the others are as ribs and muscle.

FARMER'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Practical Agriculture (advanced.)		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit. Economy, Practical Law.		3. Practical Geometry.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. Practical Agricul. (elementary).		4. English Structure.	
5. Agricul. Chemistry, Meteorology.		5. Organic. Analytical Chemistry.		5. Physics.		5. Adv'd Arithmetic, Book-keeping.	
6. Logic.		6. Practical Surveying.		6. Industrial Drawing.		6. U.S. History, Industrial Drawing.	

WOMAN'S EDUCATION.

Nearly one-half of our students are females, and the Woman's Course is prepared expressly for their liberal and practical education. We have no doubt whatever that practical men and women, who understand what it means and what it seeks to do, will fully endorse it.

WOMAN'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spr'ng.*	*Fall.*
1. Farm Economy, Special Hygiene.		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit'l Economy, Practical Law.		3. Industrial Drawing.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. English Literature.		4. English Structure.	
5. Physic'l Geography, Meteorology.		5. Organic, Household Chemistry.		5. Physics.		5. Adv'd Arith., Book-keeping.	
6. Logic.		6. Household Economy.		6. Industrial Drawing.		6. U.S. History, Industrial Drawing.	

MECHANIC'S EDUCATION.

Because of the adaptedness of the leading course to the wants of the intelligent mechanic, it has been found practically unnecessary to diverge from the Farmer's Course. Additional studies, specially adapted to the mechanic's use, will be furnished in a Post-Graduate's Course.

If it be urged that the distinctively agricultural knowledge taught in the Farmer's Course is not directly valuable to the mechanic, we reply that, admitting the point for the purpose of argument, yet: 1. This knowledge is of more practical value to the mechanic than is the Latin, Greek, or a half dozen other things embraced in the usual course preparatory to the professions; 2. That the great majority of Kansas mechanics will also be more or less engaged in agriculture; 3. That those studies in the course which are directly valuable to the mechanic, together with the shop facilities, offer a better mechanic's education than can be elsewhere found west of the Alleghanies.

INDUSTRIAL DEPARTMENTS.

Having knowledge in the head is one thing; ability to use it with the tongue, fingers or feet is quite another thing. Both are vital to success in practical life. A man might thoroughly understand the theoretical principles of carpentry, and yet, not having used the tools, be wholly unable to earn carpenter's wages. So in all other vocations. Accordingly, instruction is given in the following well-equipped Industrial Departments, and every student is required to recite in some one of them, as selected by the pupil or parent:

FOR MALE STUDENTS.	FOR FEMALE STUDENTS.
The Farm.	Dress-making.
The Nursery.	Printing.
Carpentry.	Telegraphy.
Cabinet-making.	Scroll-sawing.
Turning.	Carving.
Wagon-making.	Engraving.
Painting.	Photography.
Blacksmithing.	Instrumental Music.

Each of these departments is conducted exactly as in daily life, and aims to give precisely the drill received by an apprentice. No charge is made, either for tuition or material, from male students taking the Industrials provided for them; nor from female students taking the ones provided for them, except in the Department of Instrumental Music. Male students taking either Printing or Telegraphy are charged $1 per month for the use of material and instruments.

DEPARTMENTS OF INSTRUCTION.

DEPARTMENT OF AGRICULTURE.

PRACTICAL AGRICULTURE.

Second Year:—General principles of breeding; history and characteristics of breeds; adaptation of different breeds for special purposes and localities; implements of simple tillage; mechanical principles involved in their construction; action of the plow upon soil and subsoil; principles of draught; influence of different adjustments upon draught; use of the dynamometer; value of hoed crops in a system of husbandry; the cultivation of corn and roots; soils that need drainage; how to lay out a system of drains; house drainage; sewerage.

Fourth Year: General view of agriculture, ancient and modern; agricultural progress of the last century; relative advantages of mixed husbandry and special farming; the selection and arrangement of the farm with reference to the system to be pursued; rotation of crops; general advantages of a rotation; the best rotation with reference to disposition of labor, production of manure, and extermination of weeds; pasturage and production of grain and forage crops; manures, how best housed and applied; composting manures; commercial fertilizers; systems of feeding; stall feeding; steaming food; soiling; experiments in feeding; farm buildings; farm-houses; barns.

FARM ECONOMY.

Woman's Course, Fourth Year: Dairy products as human food; influences affecting character of milk; manufacture of condensed milk; the factory system and household plan of cheese-making; treatment of rennet; general process of cheese manufacture; subsequent treatment of cheese; butter-making; creameries; "deep" and "shallow" setting systems; general process of butter-making; packing and preserving butter.

DEPARTMENT OF BOTANY AND PRACTICAL HORTICULTURE.

This department embraces a course of instruction in the elements of botany, structural and systematic, with a constant attention to the practical application of botany to the farm, orchard, garden, nursery and forest; also a course of lectures on Landscape Gardening. The instruction is mainly given by lectures, accompanied by regular practical drill in all the work of the fruit, vegetable and flower gardens, nursery, orchard, vineyard and ornamental grounds.

The lectures in Practical Horticulture embrace the following and kindred subjects: The relation of atmospheric motion, moisture and temperature to horticulture; seeds, the means of collecting and preserving; propagation, by seeds, cuttings, layers, suckers, grafting, budding; care of young plants; improvement of varieties; management of commercial and farm nursery; modes of pruning; the orchard; fruit suitable for orchard and garden culture; the flower, vegetable and fruit garden; importance and mode of forest culture; shelter belts and their influence; weeds and useful plants; noting the species of trees worthy of culture, either for profit or ornament.

LANDSCAPE GARDENING.

The lectures on Landscape Gardening not only unfold the accepted principles of the art, but at the same time give special attention to such applications of the art as may be made universally available in laying out and improvement of farms and the homes of the people. These lectures are accompanied by a practical drill in in the work of laying out and plotting grounds topographically.

CHEMICAL DEPARTMENT.

PHYSICS.

This includes a full consideration of the laws of mechanics, of liquids, gases and vapors, weights and measures, and specific gravity, followed by experimental study in the Physical Laboratory of the laws of heat, light, with spectrum analysis, electricity and magnetism, and the relation of these forces to plant and animal life. Text-book, Ganot.

INORGANIC CHEMISTRY.

This course is opened with a careful study of chemical forces and the laws governing chemical combination. The elements, with their compounds, are next considered in succession as to their history, properties, manufacture, and especially with regard to their uses on the farm and in the arts. These lectures are accompanied by an extended course of laboratory practice in which each student performs every experiment with his own hands. Text-book, Eliot & Storer.

ORGANIC CHEMISTRY.

This comprises a thorough study of the chemistry of the organic compounds, the composition of plants and of the various compounds derived from them. Constantly accompanied by laboratory practice.

CHEMICAL ANALYSIS.

In this course each student is furnished his stand in the Qualitative Laboratory, completely furnished with apparatus and chemicals for his own use. He here performs analyses of farm soils, plant ash, commercial manures, ores, mineral waters, commercial compounds, etc. After completing this course, he enters, if he desires, the Quantitative Laboratory, where he pursues a full course in quantitative analysis. Text-book, Kedzie's Manual.

AGRICULTURAL CHEMISTRY.

This includes a thorough consideration of the application of chemical principles to the economy of the farm; the origin and formation of soils; the classification and composition of soils; the analysis of soils and their adaptation to purposes of production; the composition and use of manures; composting; chemistry of farm operations, such as plowing, fallowing, draining, etc. Text-book, Johnson's "How Crops Feed."

METEOROLOGY.

Embracing the composition of the atmosphere; atmospheric pressure; temperature and humidity; laws of storms; rain, snow and atmospheric electricity. A full course in meteorological observations is taken under direction of the Signal Service. Text-book, Loomis' Meteorology.

MINERALOGY.

This includes the study of the laws of crystallography, with the properties, forms and uses of the principal minerals of the United States. Blow-pipe analysis forms a very important part of the course, each student being required to name and identify a large series of minerals. Text-book, Dana's Mineralogy.

HOUSEHOLD CHEMISTRY.

A course of lectures on this subject is yearly delivered to a class of young ladies. The course embraces the chemistry of cooking; the composition of food; bread; tea, chocolate and coffee; butter and milk; ripening and preservation of fruits, etc.

SPECIAL COURSES

Are constantly in progress in Assaying, Pharmaceutical Chemistry and Photography.

ENGLISH LANGUAGE.

Words are simply tools used to express ideas; and, since the vast majority of our communications are made by the employment of spoken or written words, skill in using them is as profitable to the industrialist as dexterity with the needle is profitable to the seamstress. The direct aim of the course is to make the student skillful and intelligent in handling the machinery called language, just as an engineer handles a locomotive; and no drill will be omitted, or effort spared, to gain this end. Apart from the course itself, which is far more practical and complete than that usually found in literary colleges, the constant attention given this subject by all the departments, and especially the practice required in the printing classes, affords superior advantages to the student.

DRILL IN ENGLISH.

"As grammar was made after language, so ought it to be taught after language."—*Herbert Spencer.*

Drill in English embraces the following topics:

Sounds of the language; drill in producing the vocal, sub-vocal and aspirate elements with accuracy, distinctness and volume; vowels, consonants.

Letters: Form; power; rules for spelling, drill.

Words: Signification, properties, modifications, variations, relation and dependence.

Sentences: Drill in statement of ideas; description, clearness, terseness, vigor; business letters, discussion; capitalization; syllabication; punctuation; construction and analysis of sentences; elements, uses and names; criticism of compositions printed as written; proof reading; grammatical construction; superfluous words and clauses; drill in reading, speaking and penmanship.

Text-books: Webster's Academic Dictionary; Lee & Hadley's Advanced Lessons in Language.

Pupils deficient in spelling, etc., should enter the printing class, the printing-office being the work-shop of language.

STRUCTURE OF ENGLISH.

ELEMENTS OF WORDS.—The end aimed at in this study is to learn everything about words which will aid in their effective use. Among the topics included are:

Roots: What are they; their origin; their force and value as an element of language; the manner of their growth into different parts of speech.

Stems: Their derivation; their offices and properties; their relation to other parts of words.

Prefixes and Suffixes: The several sources whence derived; the relation of their force or significance to those sources; explanation of the laws and principles governing their use along with stems.

Compounds: Their value; their properties and uses; the laws governing their formation.

Synonyms: Definitions; causes of their abundance in English; the principles to be observed in choosing among them, to express a thought.

Criticism: This constitutes a prominent part of the exercises of the pupil through his whole course in the study of English. It not only diversifies and enlivens the class-room exercise, but reduces to practice the principles of the structure of the language. By this means, the student acquires not only a knowledge of English, but readiness and accuracy in speaking or writing it. The exercises in criticism embrace not only examination of selected matter, but original composition.

ELEMENTS OF SENTENCES.—The purpose in view in studying this subject is not to traverse the ground gone over in the study of grammar, but to fix in the mind of the student a clear understanding and remembrance of names, the properties and offices of the several classes of words entering into an English sentence, by showing him the reason of things; to make more simple, as well as interesting and practically useful, a study otherwise "dry and unprofitable" in many cases, by explaining the reason of the verbal forms and changes, the rules and maxims he is to remember and observe in his use of language. In the same manner he is conducted through a study of the mutual relations and dependencies of the several elements making up a sentence.

MATHEMATICAL DEPARTMENT.

Figures and lines, like words, are only instruments with which to convey ideas, or perform operations that cannot be easily done without them. The arithmetical principles used in business are few and simple; but accuracy and rapidity in computation are only gained by practice. College graduates often fail to retain clerkships, not because they do not know *why* given operations are performed, but because they can neither add, multiply or divide with that habitual correctness which renders their work reliable.

DRILL IN ARITHMETIC.

The chief design of this study is to make the student expert in the use of numbers, as employed by the industrialist for profit. The occupation of a successful farmer demands the application of every principle of practical arithmetic, and is taken as a starting point, rather than that of an abstract system. Beginning with a simple cash account, book-keeping is gradually developed to the full extent of its real utility. The areas of fields, expense of crops, construction of houses, sales of produce, and investment of capital, involve all the fundamental operations, and those of profit and loss, commission, taxes, insurance, exchange and stocks. Following this line, the student, so far from hammering away at "pure" science draws from the mathematical store-house what he needs, and sees why he needs it. Accuracy of calculation and posting, rather than a *mere* comprehension of the principles, is aimed at. Besides the recitation-room drill in business forms, practice in the field is also given. Estimating the number of cords in a pile of wood said to be 100x4x4 feet is one thing; measuring a pile of wood through which any number of cats may be harmlessly thrown, and in which four-feet sticks are the exception, is quite another and more difficult thing.

ARITHMETIC AND BOOK-KEEPING

Is a continuation of the above, having the same purpose and adopting such methods as the necessities of the class indicate. Thorough instruction in the principles and forms of business law is given. It will be seen that this method of teaching book-keeping, besides ensuring arithmetical practice, develops practical skill in that important art.

ALGEBRA.

Algebra is included in the course as a preparation for the study of Surveying.

DRAWING.

The practical value of Industrial Drawing can hardly be overestimated, first, because its study is the best drill for the development of the perceptive faculties, which are the ones most employed in daily life; and, second, because the working classes make a far greater use of lines than they do of figures. A farmer follows a line when laying a straight furrow; the carpenter uses the square and rule twenty times as often as he does figures; and a woman in cutting a pattern, or deciding that one bonnet is prettier than another, does so by the line or "form." So that either in its direct application, or in the exercise of that taste which comes from skill in using lines, this branch of mathematics is quite as important as a means of "mental discipline" as is the branch of computation, and is of far greater daily use. The admiral system of Prof. Walter Smith, Art Director of Massachusetts, is thoroughly followed through the grades of Free-hand, Geometrical, Object, Model, Perspective, Mechanical and Topographical Drawing, during the terms indicated by the Course of Study. In addition, constant practice in the application of lines to metal and wood is furnished in the Blacksmith, Carpenter, Turning, Scroll-sawing, Carving, Engraving and Printing shops, and to fabrics in the Sewing Department.

PRACTICAL GEOMETRY.

Not one farmer in a thousand ever uses the transit in surveying his land, the testimony of the county surveyor being decisive in court; but every farmer makes countless applications of lines and angles in laying off fields, roads, gardens, planning houses, determining levels, etc. The object of Practical Geometry is to teach the properties and uses of angles, and to make the student skillful in the application of lines to the field by the use of such simple instruments as are always within reach, or within his ability to construct; and accurate in the transferring of plans to the grounds, board or block.

PRACTICAL SURVEYING.

The drill in the use of figures and lines given by the mathematical course as above indicated, renders the mastery of surveying an easy task. There is no calculation made or formula used by the working engineer which cannot be readily understood and performed by a skillful arithmetician after proper instruction. The hand-book of the engineer is accordingly supplemented with such special guidance as is found necessary for a full comprehension of the mathematical principles and their applications; and extended field practice is required in the use of the compass, level, transit and theodlite.

STUDIES SPECIAL TO WOMAN.

Besides the studies already indicated, attention is called to the following:

SPECIAL HYGIENE.

As shown in the course, one term is devoted to the study of Physiology, from the text-book of Dr. J. C. Dalton. This is followed in the fourth year by a course of lectures to young ladies by Mrs. Cripps on the subject of Hygiene, embracing such instruction in hygienic matters as are valuable to woman.

FARM ECONOMY considers those affairs of the farm which usually come under the supervision of the farmer's wife or daughter, and which are not included in "gardening" or "household economy;" such as butter and cheese-making, dairy management, etc. A course of lectures is delivered by the Professor of Practical Agriculture. See heading, "Farm Economy."

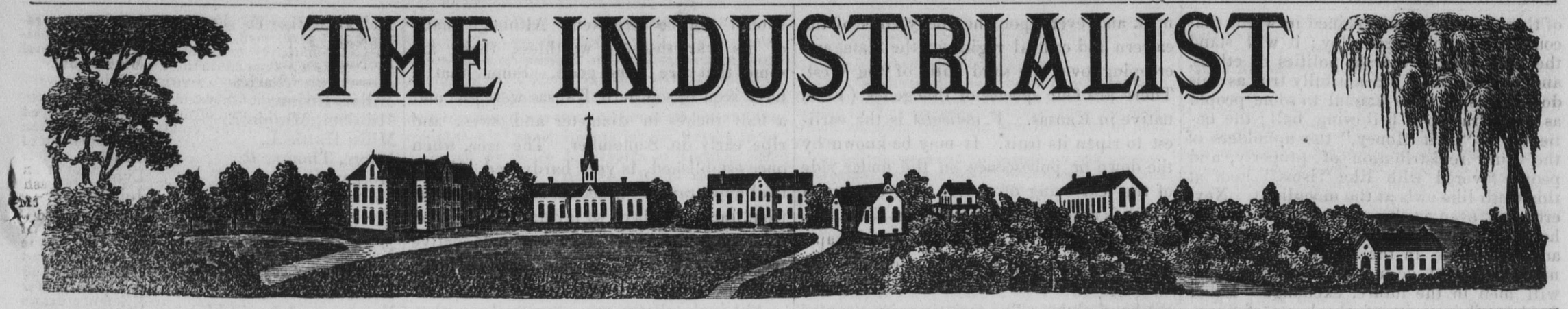
GARDENING is included in Practical Horticulture. See heading, "Landscape Gardening."

HOUSEHOLD CHEMISTRY. See heading, "Household Chemistry."

HOUSEHOLD ECONOMY

Follows Household Chemistry and consists of lectures by Mrs. Cripps in the art of house-keeping, embracing cookery, domestic management, and kindred topics. Many elderly gentlemen sufficiently know, and more young gentlemen will duly discover, that systematic knowledge of how cooking ought to be done is luminously different from the ability to do it. Instruction without practice can effect but little. Accordingly a kitchen laboratory has been completely furnished, and affords every facility for drill in the art of cooking. This drill chiefly differs from that of a kitchen in the respect that after a girl has learned to wash dishes or pare pototoes she is not kept everlastingly at either. After full trial we have found it just as feasible to give this practice, with profit and pleasure to the pupil, as it is to give laboratory practice in chemistry—and no more expensive.

THE INDUSTRIALIST



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INDUSTRIAL EDUCATION.

Not the least of the things of which Kansas has a right to be proud is its magnificent educational system. At the start a wise and vigorous policy was adopted for the education of its youth; and ever since, whether in war or peace, poverty or plenty, the State has steadily developed and carefully fostered its various educational agencies. In addition to its munificent endowment of the public schools, it has provided higher institutions for three distinct kinds of instruction, namely, normal schools for the special training of public school teachers; a university for the education of those proposing to enter the professions of law, medicine or theology; and an agricultural college for the practical education of those who will engage in any of the "industrial professions or pursuits," as distinguished from the "learned professions." The relative demand for the three forms of education is indicated by the proportion in which the citizens of Kansas follow these vocations, as shown by the last United States census. Of every one hundred persons engaged in a vocation by which money is gained, the ratios were as follows:

Normal education:		
Teachers	1.13	1.13
Professional education:		
Ministers	0.43	
Lawyers	0.55	
Doctors	0.73	1.71
Industrial education:		
In agriculture	59.13	
In manufacturing and mechanical	14.63	
In personal service	13.89	
In trade and transportation	9.51	97.16
		100.00

AGRICULTURAL COLLEGE.

Recognizing the need for an education which should especially prepare the rising generations for an intelligent and successful practice of those vocations which are followed by ninety-seven out of each hundred of its citizens, the first institution endowed and put in operation by the State was its Agricultural College, so named because of the fact that agriculture is, both numerically and actually, the chief of these vocations. The title, "Agricultural" College, is apt to mislead those who are not familiar with the above fact, and also with the further fact that the acts of both Congress and of Kansas provide for an "industrial," as distinguished from a "professional" education.

ENDOWMENT.

The endowment received from the United States Government consisted of 81,601 acres of choice land, all of which had been sold at date of last report, except 31,461 acres now on the market. The proceeds from the sale of lands are invested in school bonds, and the securities in hand amounted to $238,101.28 by last report. The annual income from this endowment is about $20,000, out of which all expenses of instruction are paid. The only aid received from the State is for the erection of buildings, in accordance with the conditions of the congressional grant. This is the only one of the State's institutions which is not dependent upon the tax-payer for its maintenance.

LOCATION.

It is situated one mile from Manhattan, Riley county, one hundred and twenty miles west of the Missouri River, in the heart of the finest agricultural State in America. The Kansas Pacific Railway, with its connecting lines, gives speedy communication with every quarter.

COURSE OF STUDY.

The course of study is shaped with direct reference to giving an industrial as distinct from a professional education. It makes the pupil intelligent and expert in the use of the English language; in the use of numbers as employed by the farmer, book-keeper and engineer; and in the use of lines as employed by the carpenter, painter and architect. Words, figures and lines are tools which all men use. It then gives thorough instruction and laboratorial or field drill in the following sciences as essentially useful to an intelligent and successful farmer: Physiology, Practical Agriculture, Natural Philosophy, Botany, Entomology, Practical Horticulture, Landscape Gardening, Inorganic Chemistry, Organic and Analytical Chemistry, Surveying, Geology, Mineralogy, Zoology, Meteorology, Agricultural Chemistry, Political Economy, Practical Law and Logic. It has an equally practical and effective course for the education of woman as a woman, instead of as a man, and as a worker instead of as a butterfly. Then, it has a well-stocked farm and nursery, and well-equipped shops, for giving boys practice in farm and nursery work, and in wood and iron work, and for giving girls drill in dress-making, printing, telegraphy, carving, engraving and music.

Production and Consumption.

Transformation a Synonym for Both.

A LESSON IN HUMILITY.

Man, regarded as a physical, intellectual and moral being, is the greatest wonder of this world of wonders. Yet, with all his wonderful powers, man never has made and never will make an atom of matter: furthermore, he is as powerless to destroy matter as he is to make it. Humiliating as this may seem, it is nevertheless a sturdy fact. What men vaingloriously call production and consumption (or in plainer English, making and destroying), are only two words used to express one idea — viz., transformation or changing. Man can only change the matter God has made. God is the sole Creator or Maker; man is but one of his creatures, who, at best, can only change what has been created. More social and economic fallacies spring from considering man as a creator or producer, than from any other one cause. Beyond doubt man is a wonder, but he is none the less a creature, and as incapable of *making* an atom of matter as a cur dog to construct a phonograph. The object of this paper is to consider man as a transformer, and to point out that he does not occupy an independent point in space, but a point on the circumference of life's great circle, with as many points to the right as to the left of him.

FALLACIES AFLOAT.

The truth that man can do more than transform matter, seems beyond the grasp of most of the prating politicians, who are rendering, to a people hungry for economic truths, their unripe ideas concerning what they are pleased to term producers and consumers. One sect of these would-be philosophers claim (if we follow their doctrines to the end), that men can have food without labor; and the other, that men can labor without food. One is directly opposed to the other, but both are equally wrong. There is no such thing on earth as a producer who does not consume, or a consumer who does not produce. Any system of government or school of philosophy which pretends to treat any man or class of men as purely producers or purely consumers, is bound to be a failure. You may cut a mule in two pieces, and have one half with ears and the other half with a tail, but you will have no mule. So is any attempt to divide society in two classes, producers and consumers; the division may be made, but society will be destroyed. Every act of consumption is hinged on some act of production; and the hinge is called a sale, or an exchange.

RAW MATERIALS, ABSOLUTE AND COMPARATIVE.

The Creator of all things made matter, and man to manage it. Matter by itself is a gift from Heaven; so is the force of gravity, power of germination, sunlight, etc. These are the only absolutely raw materials; and as they have been so lavishly bestowed, man will give nothing for them; they are to be had without even asking. It is only when two or more of God's gifts have been combined by man's energy, that the relation called property springs into being, and other men are willing to give in exchange for it what they happen to possess. It is clear, therefore, that absolutely raw materials have no value, as no man will give anything in exchange for them. To my mind raw material, in an economic sense, is anything which any man proposes to change as to its form, time or place, although it may be, nay, probably is, a finished product to some other man. For instance, cotton is a finished product to the planter, but raw material to the spinner; while in turn his yarn is a finished product to him, but raw material to the weaver; and so on through the endless links of industry. The gentlemen in Congress who occasionally tinker the Tariff, are continually stumbling over the rock of "Raw Materials!" Almost all of them are in favor of admitting free of duty what they call raw material: if they will do this, absolutely Free Trade will be permitted; for nobody will import anything that cannot be used. The finest silk garment ever turned out of Worth's establishment in Paris, is raw material to the woman who expects to wear or sell it.

EVERY MAN A MIDDLEMAN.

Changing either the form or the place or the time of matter, is what all men are always doing. This sentence is only a paraphrase for "transforming." Farmers and millers change the form of grain, growing and grinding it; merchants change its place, taking it from where it is most abundant to where it is most in demand; bankers and speculators change the time of the grain by keeping it from the period of superabundance to that of comparative scarcity. Every one of the many who handle the grain, from the plowman to the baker, are middlemen; and the labors of all are necessary to enable the man who eats the loaf to have it. He is no consumer, for previous labor of his has produced something that buys the bread, which something indirectly reaches the plowman: furthermore, eating the bread is not its consumption, for it reappears in the form of physical strength, enabling the eater to put forth fresh exertions. Neither can the farmer be called a producer; for although he "raises" the wheat, all the time he is plowing, reaping and threshing, he is consuming food, clothing, etc.; he is no more than a middleman, there having been laborers before him, and laborers shall come after him. Man is like the present, a small space between the great past and the great future, but nevertheless a space.

THE GREEN-EYED MONSTER.

Granting that men are ever transforming matter, but never making or destroying it; that men are links in industry's great chain, whose end links are locked together,— it follows that men are prosperous only really as their neighbors are prosperous. It stands to reason that no man is better off from having all his neighbors poor. The man who has but little to sell, can buy but little; the man who can but little, has but little to sell. "Love thy neighbor as thyself" is an economic as well as a moral maxim; for if your neighbor has but little, you can exchange but little with him. Therefore, your property, or capacity to exchange, is increased as his property, or capacity to exchange, is increased. Ignorance of this truth is common among all classes of society, but painfully so among the colored people of this country. Mutual jealousy is one of their weakest social points. How this spirit came about makes no difference; it exists. Instead of rejoicing at the prosperity of any one of their race, they are envious; instead of trying to get up where he is, the tendency is to try to pull him back where they are. The feeling of "Comrade, touch the elbow," seems foreign to them; and petty jealousy is one of the heaviest chains binding them. Cohesion is as necessary in a people as in a bar of iron, if either is to bear any weight. When mutual distrust or repulsion, so to speak, takes the place of mutual attraction, only a rope of sand binds a community together.

FACTS FOR FARMERS.

In the economy of nature nothing is really lost, although apparently something disappears in every change that matter undergoes. If ten thousand cords of wood were burned to ashes, and then scattered in the sea, there would not be an ounce of matter lost: there would have been a change of form, and that is all. The object of transforming any bit of matter is to increase the utility or beauty of some part of it; those transformations, then, are best, in which the least apparent loss is noticeable; but of nothing, nothing comes,— so if a portion of matter has once been transformed, another similar portion of matter must be found before a similar transformation can be made. If a man weave ten pounds of yarn into twenty-five yards of cloth, he must obtain another ten pounds of yarn before he can weave twenty-five more yards of cloth. This economic law is generally appreciated by manufacturers and merchants, as in their pursuits it is self-evident; but farmers seem generally ignorant of it, for they go on, year after year, taking away from the soil the many elements that "go to make a crop," but returning to the soil only a part of what they take away. The laws of nature are inflexible, even if farmers be unacquainted with them, and sooner or later these ignorant ones find their lands worn out and themselves bankrupts. This State is full of examples of this fact, and many a man is wearing his life out, trying to solve the question of how to subtract two from four and have four as a remainder. If a man cut and split a cord of wood, he cannot expect to feel as fresh and strong at the end of the job as at its beginning; he has exchanged his strength for the pile of split wood, and cannot have a similar amount of strength until he has exchanged for it food, sleep, etc.

THE RULE OF THREE.

All energy is a series of blows; and "to strike" is an active transitive verb. Human industry is the algebraic sum of human energies, and depends on the consumption by one man of the production of another, in order to produce something for a third. To argue that the second of these could be benefited by the injury of the first or third, is to argue that a blanket could be lengthened by cutting off either end and sowing it on the other.

THE EQUATION OF EXCHANGE.

All living men are ever exchanging something for something else; give and take are the two members of life's equation. The final expression of any equation of this sort, its simplest form, so to speak, is "Labor for labor." It matters not in what form, in how many fractions, or parentheses, the labor may be hidden, it is always labor; labor, either past or present, or yet to be performed, that is exchanged. This is a rugged, homespun truth that many do not know, and which many who do know keep tucked away in the cobweb corner of their brains, where memory and reflection are forbidden to sweep or dust. If every man could have graven on his finger-tips that everything he buys is a sale of so much of his labor, a truer economy would guide many purchases. If a man can earn a dollar a day, and buys ten drinks of whiskey at ten cents a drink, he has worked one day to tickle his palate ten times. If people about to buy anything would always measure their intended purchase with hours of labor, instead of dollars and cents, a good deal of folly would be frost-bitten, and Christmas find more people with needful dollars in their pockets. Every dollar has two sides, and is entitled to be looked at twice before it is spent. On one side count how many hours' labor it has cost you to get it; on the other, how many hours of your labor you are about to get for it; strike a balance, and keep or spend the coin, as the balance seems in your favor or against you.

OWLS OF SOCIETY.

The doctrine of "Labor for labor" is one

of those genuine truths coined in words that contain no sophistical alloy; it will stand the acid tests of morals, politics or ethics, and be unharmed. Beautifully true as this doctrine is, it is as hateful to some people as a red rag to a bellowing bull; the believers in "Fiat Money," the upholders of the equal redistribution of property, and people fevered with like "isms," hoot at this truth like owls at the moonlight. Nevertheless, even as the moon, in spite of owl hoots, has shone in the past, shines now, and will shine in the future, just so have men in the past, do men in the present, and will men in the future, exchange "Labor for labor," in spite of the hoots of "ism-ites" whose "ism" truth won't fit.—*T. T. B., in Southern Workman.*

THE INDUSTRIALIST.

SATURDAY, JANUARY 11, 1879.

JNO. A. ANDERSON, Managing Editor.

ASSOCIATE EDITORS, MEMBERS OF THE FACULTY.

The Native Fruits of Kansas.

Kansas can rightfully claim, as native of her own soil, the following fruits. First, we should perhaps place the plum. Of this fruit there are several native species in Kansas, and an innumerable number of varieties. The common, little, round, red, and persimmon-like, wild plum (*P. chicasa*), is more properly called a sloe. Although it would seem almost worthless because of its extreme acid qualities, yet there are some of its native seedling varieties that are quite well flavored and of good size. The fruit ripens during September and October. There is an earlier ripening species which is far larger in size and superior in flavor. Its shape is oblong and its color yellow, pink or red.

In the western part of the State is another species of this genus, which is the earliest of all the native plums and by far the sweetest. It is commonly called the sand-hill plum. It grows in great abundance upon the sand hills along the Arkansas River, the Smoky Hill, and many other streams in western Kansas. The plant rarely exceeds six feet in height and only deserves the name of shrub. Its leaves are very small and shiny, and its branches low and in season loaded with fruit from the ground up. During the month of July, it affords to the settlers of the western prairies a most welcome, wholesome and delicious fruit for immediate use and for preserving, and is even sold and shipped over the railroads to a considerable extent.

From these three species of the native Kansas plums, by the aid of intelligent culture and selection of varieties, we may obtain excellent fruits.

The blackberry is rather sparingly distributed in the western part of Kansas, but may be found along the wooded creeks and ravines in the eastern part, and seems to increase as the country becomes settled. The common wild blackberry is the same species that abounds in most parts of the United States, and is scientifically named *Rubus villosus*. Many of its wild varieties are of good quality.

The species *R. Canadensis* is the northern dewberry. Its habit is to trail upon the ground, and, although often many feet in length, its branches are very slender. The berries ripen some two weeks in advance of the former species and are more delicate and juicy.

The raspberry has, so far as I have seen or heard, but one native species in Kansas. The common name is black-cap raspberry, so called, no doubt, from its dark color and cap-like shape. Many persons have very good berries in cultivation which they have taken from their native woods.

Grapes are seen in every wild, timbered nook and even upon the rocky cliffs of the eastern and central region of the State, and creeping over the sand hills of the West. There are four species of this genus (*Vitis*) native in Kansas. *V. æstivalis* is the earliest to ripen its fruit. It may be known by the down or pubescence on the under side of the leaf being of a dull, rust color, and which is blue-black, ripening in midsummer. *V. cordifolia* is the well-known frost grape. It ascends the tallest trees, and often hangs its tempting clusters far above the reach of the boys' clubs. The fruit is quite popular when made into pies or sauce, and is indeed very rich in saccharine matter. The leaves are sometimes smooth and often slightly downy beneath. *V. vulpina* means fox grape. This is the muscadine or southern fox grape. The leaves not being downy beneath are easily told. The berries are in small clusters (sometimes only three or four), and generally of a dull, red color, very tough-skinned and very foxy to the taste. *V. indivisa* is a beautiful vine not generally found throughout the State. The leaves are only downy a very little on the under side. The fruit is borne in small, loose bunches of five to eight berries, which are the size of a pea and generally of a light red or blue-black color. It makes a very handsome shade for a summer-house.

The wild gooseberry (*Ribes lacustre*) is found in every part of Kansas. Its fruit is gathered by many, and when cooked is quite palatable. In the western part of Kansas may also be found the wild currant, of which there are three native species. *Ribes floridum*, the wild black currant; *R. rubrum*, wild red currant; and *R. aureum*, the Missouri or yellow flowering currant. As yet there has been found but one variety of the wild currant, and that is of the *R. floridum* or black species, that is thought to perhaps be of value to horticulture as a fruit. It is from the region of the Medicine Lodge River, in southern Kansas, and is said to be very productive.

The strawberry is found wild in moist places, often almost hidden by the tall grass. Many may suppose that our wild strawberry is the same species as those commonly grown in gardens, but such is not the case. The native species is *Fragaria virginiana*. Its fruit is small and more highly flavored than the commonly cultivated sorts, which are nearly all of European origin.

There is another fruit, little known even among horticulturists, called the Juneberry. Many know it as service berry. It grows in the eastern and far western States, in wild, rocky or hilly places, and is found in some such places in Kansas. *A. Canadensis* is a small tree, ten to thirty feet high, bearing purplish, berry-like fruit of a sweet and pleasant flavor. As they ripen in June, they are properly called Juneberries. But there is a smaller growing species, or perhaps only a sub-species or variety of the former, which is far more useful to man. Its leaves and fruit are quite similar, but the plant is only a shrub, as it grows from two to six feet high. It has been named dwarf Juneberry. It is as prolific as the gooseberry, of easy culture, and the fruit is rather larger and better flavored than the larger-growing kind. It will grow grafted or budded upon the apple and pear, which proves that it is close kin to these fruits. The construction of the fruit, although so much smaller and borne in clusters, is like the apple. Much may be expected from this fruit, as it is now being tested and improved by some of the horticulturists of Kansas. The dwarf species (*A. oblongifolia*) is found wild in south-eastern Kansas.

The persimmon (*Diospyros virginiana*) should not be forgotten. Although many of its varieties are worthless, there are some that are very good. Some that I have seen in southern Kansas were one and a half inches in diameter and sweet and ripe early in September. The tree, when once established, is very hardy and of beautiful appearance. Since its cousin (*D. kaki*) from Japan has been so favorably spoken of, it becomes us to look after our own native persimmon, that we may improve its quality as the Japanese have theirs.

Although there are some others that might claim the name of native Kansas fruits, these are all that we think now worthy the title.—*Prof. VanDeman.*

Students Enrolled Since Jan. 3, 1879.

NAME.	COUNTY.
Adams, Emma L.	Riley.
Allen, Albert H.	Nemaha.
Allen, Chester	Mitchell.
Axtell, Frank D.	Pottawatomie.
Axtell, Fred W.	Pottawatomie.
Ayres, Sarah	Shawnee.
Barnes, E. M.	Osage.
Bates, Charles W.	Vermont.
Bayles, Benjamin B.	Riley.
Beacham, Augustine	Marshall.
Blain, Arthur T.	Riley.
Breakbill, John	Riley.
Buchli, Bartholomew	Wabaunsee.
Buell, C. Stewart	Riley.
Buell, Delight A.	Riley.
Call, Henry L.	Shawnee.
Call, Charles M.	Shawnee.
Campbell, Emma	Riley.
Campbell, Ettie A.	Riley.
Campbell, May	Riley.
Chenoweth, Charles C.	Cherokee.
Chenoweth, J. W.	Cherokee.
Clarke, Ezra S.	Riley.
Clarke, Hattie P.	Riley.
Clarke, Mary	Riley.
Coburn, Ella	Saline.
Coleman, Edward P.	Iowa.
Cowell, William J.	Clay.
Cox, George A.	Riley.
Cox, Lizzie R.	Riley.
Cripps, Edward V.	Riley.
Culter, Horace M.	Sedgwick.
Dickson, A. F.	Johnson.
Donaldson, Alvin	Butler.
Donaldson, Flora	Butler.
Donaldson, George	Butler.
Durkee, Annette	Lyon.
Durkee, Orpheus	Lyon.
Eckman, Wilmer K.	Osborne.
Edmiston, Dora	Illinois.
Everhart, Logan W.	Labette.
Farnsworth, Henry E.	Lincoln.
Favour, William P.	Greenwood.
Flack, John B.	Dickinson.
Gist, John M.	Riley.
Gist, Joseph T.	Riley.
Glossop, Emma	Riley.
Goin, Edgar L.	New York.
Gordon, George A.	Jackson.
Griffing, William J.	Riley.
Gross, W. E.	Saline.
Hicks, Wm. G.	Cherokee.
Himes, Hattie	Riley.
Hopkins, Harry H.	Butler.
Hotchkiss, Charles S.	New York.
Hoyt, Emma	Riley.
Hulett, C. M.	Johnson.
Humphreys, George	Sumner.
Hunt, Henry L.	Cherokee.
Hunting, Cora M.	Riley.
Hutsell, Sallie	Cherokee.
Jacobs, James H.	Cherokee.
Jaquith, Walter W.	Davis.
Jeffrey, William J.	Riley.
Jeffrey, Fletcher	Riley.
Jewell, Fred	Butler.
Kent, John H.	Riley.
Keyes, George C.	Wabaunsee.
Kingsbury, Eddie L.	Coffey.
Kinsey, Dora	Shawnee.
Knipe, George D.	Riley.
Knostman, Emma	Riley.
Leach, Darwin S.	Mitchell.
Lewis, Issie	Riley.
Lewis, Jno. W.	Riley.
Light, Willis	Neosho.
Limbocker, Clyde	Pottawatomie.
Limbocker, Clarence	Pottawatomie.
Luse, William P.	Missouri.
Lynch, Fred C.	Cherokee.
Mails, Mattie	Pottawatomie.
Mann, John	Rice.
Mason, Silas C.	Ottawa.
McBratney, William	Nemaha.
McGuire, Katie I.	Johnson.
McNair, Alice E.	Wabaunsee.
McNair, J. L.	Wabaunsee.
McNair, S. E.	Wabaunsee.
Messenger, Charles	Cowley.
Miller, Edgar	Davis.
Millikan, Minnie E.	Johnson.
Mills, Hattie L.	Missouri.
Moore, Thomas R.	Smith.
Morgan, S. M.	Lyon.
Morrow, John N.	Johnson.
Myers, Wirt S.	Allen.
Neiman, Charles	Nemaha.
Nelson, Cassius C.	Illinois.
Nelson, Henry	Ottawa.
Neusbaum, Ada A.	Riley.
Neusbaum, Lincoln H.	Riley.
Noland, Manda	Riley.
Noyes, Amy E.	Wabaunsee.
Noyes, Ida L.	Wabaunsee.
Outt, J. F.	Montgomery.
Paine, Edwin C.	Lyon.
Parker, Grace	Riley.
Peckham, Almira S.	Riley.
Pettit, D. C.	Cherokee.
Platt, Henry A.	Riley.
Randel, Alta	Nemaha.
Randel, Charles F.	Nemaha.
Randel, Henry A.	Nemaha.
Records, C. M.	Chautauqua.
Reed, C. J.	Pottawatomie.
Reeve, Mark A.	Lyon.
Reynolds, Theodore	Riley.
Richards, Bettie	Pottawatomie.
Richardson, Noble A.	Wilson.
Robinson, Joseph N.	Shawnee.
Rose, George E.	Cherokee.
Rose, Wm. N.	Cherokee.
Rushmore, H. C.	Jefferson.
Rust, Charles	Atchison.
Salter, Lewis A.	Montgomery.
Shartell, Cassius M.	Chautauqua.
Short, Burton L.	Cherokee.
Sickels, Maria E.	Missouri.
Sikes, Wm. H.	Pottawatomie.
Sloan, John A.	Clay.
Smith, B. B.	Dickinson.
Spooner, Alice G.	Clay.
Stiles, Charles H.	Wabaunsee.
Strong, Grace R.	Riley.
Tarrant, Will S.	Cowley.
Thackrey, Isaac	Riley.
Thackrey, Sarah	Riley.
Thompson, George F.	Cowley.
Ulrich, Cora L.	Riley.
Vaught, Cora	Butler.
Vincent, Ella E.	Riley.
Wahl, Charles A.	Indiana.
Wahl, Fred E.	Indiana.
Wahl, Wm. H.	Indiana.
Walters, Rosette	Davis.
Welch, C. R.	Harvey.
Welch, J. C.	Illinois.
Whaley, Rowena	Riley.
Whaley, Willie E.	Riley.
Whiteside, Wm. A.	Cherokee.
Wilson, Elmer E.	Cherokee.
Wilson, J. E.	Shawnee.
Winder, Ivaloo	Riley.
Wood, Clarence E.	Pottawatomie.
Woods, Albert O.	Sumner.
Woodworth, J. W.	Cherokee.
Wright, Robert H.	Ford.

THE INDUSTRIALIST.

SATURDAY, JANUARY 11, 1879.

The College authorities want to buy twenty-five cords of wood. See advertisement in another column.

The Kansas Legislature will meet next Tuesday. The new Governor will be inaugurated on Monday.

The old settlers of Riley county are preparing for another re-union. Several of these pioneers have passed over the river since last year's celebration.

The article entitled "Keeping Bach" is taken from the Alpha Beta *Gleaner*. Of course, it is a burlesque, but it helps to make a society paper interesting.

Prof. A. E. Blunt, of White Cliff Springs, East Tennessee, called on us yesterday morning and made a hasty visit to the different departments of the College.

The house which Kinsey and Ayres have built is situated on the first lot east of Prof. Gale's residence. It is a neat little place, substantially built, conveniently arranged, and comfortable.

One hundred and fifty-seven students are now attending the College. The classes are all organized, the students have settled down to hard work, and an air of business pervades the whole Institution.

Clay Crouse, a College student in 1874 whom everybody knew, is fireman on a railroad in southern Kansas, with prospects of being made engineer some day. He wrote to us this week, asking for information about the College.

Among the recent sales of live stock by the Farm Department may be mentioned: To Chas. Reynolds, Ft. Riley, Kas., one Berkshire pig; to Geo. W. Fry, Topeka, Kas., pair of Berkshires; and to W. P. Dixon, Wichita, Kas., one Essex pig.

We have lately printed for the Farm Department a catalogue of improved Berkshires, representing the principal families composing the College Farm herd. It is quite a valuable catalogue, and can be obtained by addressing Prof. Shelton, Manhattan, Kansas.

Our old friend, Frank Jackson, once Superintendent of the College Telegraph Department, has again been promoted. This time he goes to Kansas City, where he will have charge of the State Line Office. Frank is a noble, faithful man, and we are glad to know that the Kansas Pacific appreciates his services.

The Board of Regents held its regular quarterly meeting this week. On account of the storms, some of the members were not present. The accounts against the College were audited and ordered paid, the new building was thoroughly inspected, and the general wants and interests of the College considered. The Board will meet again in March.

The students in the Mechanical Department have been doing some fine work lately. Our attention has been called to two large walnut desks, two extension tables, two safes, a piano stool, a pulpit stand, several fancy goblets, and some wood turning which is hard to beat; and all the work of students. If any one thinks that our boys can't learn the trades here, let him come up and examine the work they do.

C. M. T. Hulett, a member of the class in carpentry, has lately completed a job of which he may justly feel proud. It is a pulpit stand, made of walnut and finely finished. In design the stand is similar to the one in the Manhattan Presbyterian Church, and is to be sent to the church at Mr. Hulett's home, in Edgerton, Johnson county. The job reflects credit upon Mr. Hulett as an apt pupil and Mr. Hawkes as a faithful teacher.

The students will have an opportunity next week to hear one of the best lectures in Kansas. Noble Prentis isn't excelled by any one in the West as a lecturer. He has an original way of telling what he has seen and heard, which makes him a very interesting speaker. His subject is "Funny Americans;" and if you desire to hear something both instructive and amusing, attend his lecture at the Presbyterian Church, next Saturday evening, Jan. 18th. Admission, 25 cents.

25 CORDS OF WOOD WANTED.

Bids for sound, hard, thoroughly-seasoned wood will be received by the undersigned till 3 P. M., Monday, January 20, 1879. About twenty-five cords wanted. Bids can be made for furnishing smaller lots. Wood to be delivered in rank at Agricultural College, as wanted. Right to reject any bid reserved. JNO. A. ANDERSON, Sec'y.

Owing to the "varnishing mania" which had taken hold of Sup't W. C. Stewart, the Webster Society was obliged to hold its first session of the term in the world-renowned hall of the Alpha Betas. But on account of the absence of a large number of the students and the extreme cold, only a few members were present. The principal business transacted was the election of officers and the completion of arrangements for the lecture to be delivered by Noble L. Prentis, of Topeka. The officers-elect are: President, H. C. Rushmore; Vice-President, A. Beacham; Recording Secretary, J. N. Morrow; Corresponding Secretary, L. A. Salter; Treasurer, S. M. Morgan; Critic, J. H. Lynch; Librarian, A. F. Dickson; Marshal, M. A. Reeves; Reporter, D. S. Leach.

Why the fates should ordain that the resolution accepting Mr. Prentis' offer should be adopted in that "lofty amphitheatre" of the Alpha Betas, is something your reporter can not explain. But, as Galileo said, "the world still moves." Mr. Prentis will deliver his lecture on "Funny Americans," Saturday evening, Jan. 18th, under the auspices of the Webster Society. Admission, 25 cents; children under twelve years, 15 cents. Considering the popularity of the lecturer, the terms are reasonable. The subject is funny, the author more so, and, as a natural consequence, the lecture will be a great treat, and will be enjoyed by all who hear him. If you wish a good time, a good laugh, and lots of fun, come. "Come one, come all;" and in your coming, don't forget to call on the Webster Society, where this great and glorious project sprang into existence. LEACH.

KEEPING "BACH."

To keep "bach," you must have a bachelor's outfit. This consists of an old stove with all the lids bracked, one of the doors broken off the hinges (and which has to be propped up by a stick of wood), half the hearth gone, a hole in the oven which serves to let the ashes down on the bread, and that convenience called the damper entirely gone. Add to this a rusty frying-pan, with the handle broken off; a four-gallon jar, which you can make do duty as tea-kettle, dish-pan, stew-pan and wash-dish; a few old tin cups and pans for plates; and you have a fair assortment of of what generally constitutes the cooking utensils. You now want some kitchen furniture. A table and bedstead are the only necessary things in this line. The table should be made of pine lumber nailed to pieces of 2x4 scantlings, and must be built substantially,—not that it will be loaded with all the delicacies of life, but because it is to serve many purposes. The bedstead may be cut after the same pattern. On this you are to place a straw-tick covered by a blanket, between which you are expected to sleep, with your boots for a pillow.

Your next step is to procure something to "sustain life." Most all bachelors agree that plain, cheap food is most wholesome. Accordingly, you will get a sack of third-rate flour, fifty pounds of meal, a bushel of Irish potatoes, two bushels of beans, a pound of salt, a paper of soda, a box of matches, a gallon of sorghum, and seventy-five cents' worth of coffee. These supplies will last through the term.

To avoid loneliness, several boys club together, and the task of cooking is divided among the members. The most rigid rules are enforced in regard to the household duties,—no member daring to put forth an effort to prepare a meal unless it is his turn. Strange to say, no one has ever been known to claim the turn of washing the dishes. To make good bread, requires considerable practice; the more of it (the practice, we mean), the better. It is amazing how bread-making will clean one's hands. But then, perhaps we should not have referred to this.

Now, lady friends, if you will give us some good recipes for cooking potatoes with the "jackets" on, for turning pan-cakes, and for removing the grease from the dish-cloth, we shall be under many obligations to you.—"*Many Bachelors*," *in the Gleaner, published by the Alpha Beta Society.*

ENTERPRISE ITEMS.

And now Mensing's cup of woe sloppeth over! It is a girl.

Sam Kimble, Esq., is now city attorney, vice Mr. Spilman, resigned.

Congressman Phillips, of Kansas, is about to commence a series of popular lectures in a Presbyterian Church of Washington, on Christian civilization.

Texas has 1,700 convicts, of whom 500 are kept in prison and the rest are hired out to work on railroads and farms. One, undergoing a life sentence, is hired by his wife and lives comfortably at home.

The freight on coal from Kansas City to Manhattan has been reduced from two dollars and a quarter to two dollars and twenty-five cents per ton. This news will make the hearts of the poor leap for joy.

NATIONALIST ITEMS.

A. A. Stewart is boarding at Jacob Winne's.

We have just learned that Mrs. I. K. Perry [Mrs. H. V. Werden] has a little one a few months old.

We had a whole wagon load of hickory nuts in town this week, which was quite a novelty. They came from the southern part of the State.

Prof. H. S. Perkins will hold a musical convention in Junction City, Jan. 28th to 31st, assisted by Otto Soldon, a celebrated violinist, and several other superior singers and players.

Mr. H. S. Maynard, who is teaching school above Randolph, on Fancy Creek, was down this week having Dr. Lyman remove a tumor from his neck, which has been troubling him for three or four years.

The militia were out on parade on the avenue, Wednesday evening, with fine martial music, and we were surprised to observe the progress they have made in their drill. They have had an election of officers, and a new interest seems to be springing up in the "ranks."

Included in a shipment of thirteen car loads of stock made by Maj. Adams, on Tuesday last, were sixty-three head of very choice beeves, averaging 1,450 pounds each, fattened by I. V. Inskeep, of Pottawatomie county. Although these cattle were bought at a high price last fall, it has proven profitable to feed them. The secret of their extra quality, the Major says, is that they were put on full feed early in September and have been well fed since.

DIRECTIONS TO APPLICANTS.

TERMS OF ADMISSION.

Candidates for admission must be fourteen years of age, and pass a satisfactory examination in reading; arithmetic, through decimal fractions; and English grammar, to syntax. Classes are started at the beginning of each year in Drill in Arithmetic and Drill in English; and the pupil must have the knowledge above indicated, else he will be unable to retain position if admitted.

Pupils will be received at any time during the year, if able to pass an additional examination upon the subjects studied by the classes which they expect to enter. But they will find it greatly to their advantage to be present at the opening of each term, or as soon thereafter as posssble.

GRADES.

Both the Literary and Industrial recitations are graded daily upon a scale of 100; and an examination of all classes is made at the close of each month. A student not attaining an average grade of sixty is promptly dropped to a lower class, or excluded from the Institution until able to do so. The work of grading is strict and uniform in all the departments, and this process is rigorously used for sifting out incompetent and indolent pupils; thus more than accomplishing all that is designed to be effected by a "high standard of admission." Hence, the student's continuance in the College wholly depends upon his own action.

The course is based upon the determination to make the labor required in the preparation of one industrial and three literary recitations as much as the average student can perfectly perform, in ten hours a day. We design to give the pupil the worth of the time expended at College; and, in order thereto, he must do a full day's work with brain or hand. Only those students who can maintain a standing of ninety in each study will be allowed to take more than the prescribed number of recitations; and no one will be permitted to have less than one industrial and three literary recitations.

RELIGIOUS.

Unless otherwise directed by parents, students are required to attend chapel at 8:30 A. M. on academic days, and divine service once every Sabbath.

EXPENSES.

There are no charges whatever for enrollment, attendance or instruction in the regular courses; nor are there any "contingent fees" for the repair of buildings, for the use of books or apparatus, for diplomas, or the kindred privileges usually grouped under the term "contingent." Male students are furnished instruction, the use of apparatus, instruments or tools, in both the literary and industrial classes marked out for them, without any charge. And the same is true of female students in the regular classes provided for them. Printing and Telegraphy are industrials primarily provided for the education of female students, and male students taking either of these are charged $1 per month for use of instruments.

Instrumental music is a fine art or "accomplishment," rather than a mechanical art. We do not place it among our "industrials" in the same sense, or for the same purpose, that we do those provided for teaching the trades. Accordingly, a fee of $12 per term, or seventy-five cents per week is required from female students for tuition and the use of pianos or organs.

The only charge made for material in either the literary or industrial departments is for the chemicals used by students in laboratory practice, which are furnished at wholesale prices, and amount to but a small sum.

Furnishing an absolutely free education is as much as can be reasonably asked; and the Institution neither boards, clothes, nor supplies the student with text-books. Boarding can be obtained in private families at from $2.75 to $4 per week. Washing costs from seventy-five cents to one dollar per dozen. Text-books, which can be procured in Manhattan, cost from $2 to $5 per term.

No student need expend over $5 per week; and many of our best pupils are living at $1.25 per week. Students desiring to "board themselves" can do so at from $1 to $2 per week. In a club of four young men, renting a house, the average cost to each for the term was $1.11 per week.

LABOR.

Manual labor by the students may be for either of two purposes: First, to acquire skill in a given art; second, to earn money. In the first case, the labor is educational; in the second, it should be paid for by the party benefited.

Educational Labor.—Manual labor in the reciations of the Industrial Departments, like mental labor in those of the Literary Departments, is purely educational and will not be remunerated. While the interest of the student will be held paramount in the direction of this labor, the practice necessary to dexterity will be required.

Remunerated Labor.—When the Institution needs labor on the Farm or elsewhere which is not educational, but simply for its own profit, and which a student is able and willing to perform, it becomes an employer instead of a teacher, and he an employe instead of a scholar. It pays for work, he works for pay. The relation between them is commercial, not educational; and both parties must act upon business principles. Hence, the College furnishes only such employment as its own interests require, and will pay according to the value of the service rendered at from seven to ten cents an hour.

AMOUNT EARNED.

It is impossible to predict how much a given person can earn, since that depends upon what he can do and what work there is to be done. Hence, it is wholly impossible for us to answer the question so often asked: "Do you think I can meet my expenses by work?" Some students make one-half their expenses, some the whole, and exceptional men have made more than expenses. As a rule, a faithful boy skilled in farm work can earn half his expenses on the Farm or in the Nursery. During the year he can ordinarily acquire sufficient skill in the wood or iron shops to enable him to make articles for sale. The whole question is one for his own consideration and decision. We can teach all who come, but cannot absolutely *promise* anything more. Hitherto we have refrained from holding out strong inducements respecting the amount of labor we might have to offer; but in view of the fact that during each of the last three years we have had more to do than the students could perform, we are inclined to give greater and positive encouragement on this point. Any boy who is in dead earnest, who is familiar with farm operations, and who can raise $50 to start with, should be able to carry himself through the four years' course. And certainly this places an education within the reach of every determined boy. As yet we are unable to offer similar advantages to girls, not requiring labor in the College departments which they can perform.

RULES.

1. Behave as a true man or woman should, at all times and in all places.

2. Attend to your own business promptly, thoroughly and courteously; and vigorously let alone that of other people.

3. Penalty: "Leave!"

PUBLICATIONS.

The "Hand-Book," published in 1874, containing a full discussion of the educational question and the aims of the Institution, will be forwarded to any one desiring it.

THE INDUSTRIALIST, a weekly journal edited by the Faculty and published by the Printing Department, contains original and seasonable articles on the Farm, Orchard, Trades, Sciences, and Education. Price, 75 cents a year. Address A. A. Stewart, Manhattan.

CALENDAR.

Winter Term 1879.—Begins Friday, January 3d, 1879.

TO NEW STUDENTS.

Bring the text-books you have been using. On arrival, first arrange for your boarding. A. A. Stewart, Sup't Printing Department, will furnish information, either by letter or on application, concerning boarding places or rooms for rent. Report to the President at 8:30 A. M., immediately after chapel, for enrollment.

For further information apply to Jno. A. Anderson, President, Manhattan, Kansas.

LITERARY SOCIETIES.

ALPHA BETA.—Chartered, December 26th, 1870. Meets in College building every Friday at 2 P. M. Ladies admitted. New students cordially invited to attend. W. H. SIKES, President.
MISS MARIA E. SICKLES, Secretary.

WEBSTER.—Chartered, January, 1871. Meets in Telegraph Hall every Saturday evening. Visitors, especially students, always welcome.
H C. RUSHMORE, President.
J. N. MORROW, Secretary.

RAILROAD TIME-TABLE.

KANSAS PACIFIC RAILWAY.

PASSENGER ARRIVES.

No. 2, going East	11:14 A. M.
No. 4, going East	3:47 A. M.
No. 1, going West	5:10 P. M.
No. 3, going West	4:33 A. M.
No. 7 (freight), going West	8:15 A. M.

Nos. 1 and 2 run daily; Nos. 3 and 7 run daily except Monday; No. 4 runs daily except Sunday. Passengers with tickets are carried on No. 7.
GEO. C. WILDER, Agent.

KANSAS STATE AGRICULTURAL COLLEGE.

FACULTY.

J. A. ANDERSON, *President, Prof. Political Economy.*
M. L. WARD, *Prof. Mathematics and English.*
G. H. FAILYER, *Prof. Chemistry and Physics.*
E. M. SHELTON, *Prof. Prac. Agricul., Sup't Farm.*
H. E. VAN DEMAN, *Prof. Botany and Horticulture.*
J. E. PLATT, *Prof. Elem'y English, Mathematics.*
JNO. D. WALTERS, *Teacher Industrial Drawing.*
HON. D. J. BREWER, *Lecturer on Practical Law.*
T. T. HAWKES, *Sup't Mechanical Department.*
A. A. STEWART, *Sup't Printing Department.*
W. C. STEWART, *Sup't Telegraph Department.*
MRS. M. E. CRIPPS, *Sup't Sewing Department.*
W. L. HOFER, *Teacher of Instrumental Music.*

INDUSTRIAL EDUCATION.

The real value of an education to the student depends upon two things: First, the practical worth of the knowledge taught; and, second, the degree in which he makes it his own. Hence, the ability of any institution to give a practical education depends upon the kind and aim of the knowledge it teaches, and upon the thoroughness of the instruction therein. The State Agricultural College was directly endowed by Congress, and is guided by the State, for the specific purpose of furnishing to the industrial classes of Kansas a "practical" education, that is, "one fit for use." As its name indicates, and as the statistics of the industries of the State require, its chief work must be that of giving a useful and usable education to those who will engage in farming; and, therefore, the Farmer's Course must, from the nature of the case, be its main one.

FARMER'S EDUCATION.

Words and figures are merely instruments with which to record ideas. They are not themselves ideas, nor should they be made the chief end of an education. As a wagon is necessary to haul grain, so are they a necessary part of an education; but as the wagon is not the grain, so they are not the knowledge which the farmer converts into money. Hence, the classics and higher mathematics are not taught. But it will be noticed in the following course that so soon as the pupil acquires working skill in the use of the English language as a tool, and of figures and lines as mathematical tools, those arts and sciences which present knowledge that has a cash value to the farmer are taught as rapidly as their importance and thorough acquisition will permit. Studies numbered (1) and (4) in the second, third and fourth years are the spine of the course, to which the others are as ribs and muscle.

FARMER'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Practical Agriculture (advanced.)		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit. Economy, Practical Law.		3. Practical Geometry.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. Practical Agricul. (elementary).		4. English Structure.	
5. Agricul. Chemistry, Meteorology.		5. Organic, Analytical Chemistry.		5. Physics.		5. Adv'd Arithmetic, Book-keeping.	
6. Logic.		6. Practical Surveying.		6. Industrial Drawing.		6. U.S. History, Industrial Drawing.	

WOMAN'S EDUCATION.

Nearly one-half of our students are females, and the Woman's Course is prepared expressly for their liberal and practical education. We have no doubt whatever that practical men and women, who understand what it means and what it seeks to do, will fully endorse it.

WOMAN'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Farm Economy, Special Hygiene.		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit'l Economy, Practical Law.		3. Industrial Drawing.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. English Literature.		4. English Structure.	
5. Phys'l Geography, Meteorology.		5. Organic, Household Chemistry.		5. Physics.		5. Adv'd Arith., Book-keeping.	
6. Logic.		6. Household Economy.		6. Industrial Drawing.		6. U.S. History, Industrial Drawing.	

MECHANIC'S EDUCATION.

Because of the adaptedness of the leading course to the wants of the intelligent mechanic, it has been found practically unnecessary to diverge from the Farmer's Course. Additional studies, specially adapted to the mechanic's use, will be furnished in a Post-Graduate's Course.

If it be urged that the distinctively agricultural knowledge taught in the Farmer's Course is not directly valuable to the mechanic, we reply that, admitting the point for the purpose of argument, yet: 1. This knowledge is of more practical value to the mechanic than is the Latin, Greek, or a half dozen other things embraced in the usual course preparatory to the professions; 2. That the great majority of Kansas mechanics will also be more or less engaged in agriculture; 3. That those studies in the course which are directly valuable to the mechanic, together with the shop facilities, offer a better mechanic's education than can be elsewhere found west of the Alleghanies.

INDUSTRIAL DEPARTMENTS.

Having knowledge in the head is one thing; ability to use it with the tongue, fingers or feet is quite another thing. Both are vital to success in practical life. A man might thoroughly understand the theoretical principles of carpentry, and yet, not having used the tools, be wholly unable to earn carpenter's wages. So in all other vocations. Accordingly, instruction is given in the following well-equipped Industrial Departments, and every student is required to recite in some one of them, as selected by the pupil or parent:

FOR MALE STUDENTS.	FOR FEMALE STUDENTS.
The Farm.	Dress-making.
The Nursery.	Printing.
Carpentry.	Telegraphy.
Cabinet-making.	Scroll-sawing.
Turning.	Carving.
Wagon-making.	Engraving.
Painting.	Photography.
Blacksmithing.	Instrumental Music.

Each of these departments is conducted exactly as in daily life, and aims to give precisely the drill received by an apprentice. No charge is made, either for tuition or material, from male students taking the Industrials provided for them; nor from female students taking the ones provided for them, except in the Department of Instrumental Music. Male students taking either Printing or Telegraphy are charged $1 per month for the use of material and instruments.

DEPARTMENTS OF INSTRUCTION.

DEPARTMENT OF AGRICULTURE.

PRACTICAL AGRICULTURE.

Second Year:—General principles of breeding; history and characteristics of breeds; adaptation of different breeds for special purposes and localities; implements of simple tillage; mechanical principles involved in their construction; action of the plow upon soil and subsoil; principles of draught; influence of different adjustments upon draught; use of the dynamometer; value of hoed crops in a system of husbandry; the cultivation of corn and roots; soils that need drainage; how to lay out a system of drains; house drainage; sewerage.

Fourth Year: General view of agriculture, ancient and modern; agricultural progress of the last century; relative advantages of mixed husbandry and special farming; the selection and arrangement of the farm with reference to the system to be pursued; rotation of crops; general advantages of a rotation; the best rotation with reference to disposition of labor, production of manure, and extermination of weeds; pasturage and production of grain and forage crops; manures, how best housed and applied; composting manures; commercial fertilizers; systems of feeding; stall feeding; steaming food; soiling; experiments in feeding; farm buildings; farmhouses; barns.

FARM ECONOMY.

Woman's Course, Fourth Year: Dairy products as human food; influences affecting character of milk; manufacture of condensed milk; the factory system and household plan of cheese-making; treatment of rennet; general process of cheese manufacture; subsequent treatment of cheese; butter-making; creameries; "deep" and "shallow" setting systems; general process of butter-making; packing and preserving butter.

DEPARTMENT OF BOTANY AND PRACTICAL HORTICULTURE.

This department embraces a course of instruction in the elements of botany, structural and systematic, with a constant attention to the practical application of botany to the farm, orchard, garden, nursery and forest; also a course of lectures on Landscape Gardening. The instruction is mainly given by lectures, accompanied by regular practical drill in all the work of the fruit, vegetable and flower gardens, nursery, orchard, vineyard and ornamental grounds.

The lectures in Practical Horticulture embrace the following and kindred subjects: The relation of atmospheric motion, moisture and temperature to horticulture; seeds, the means of collecting and preserving; propagation, by seeds, cuttings, layers, suckers, grafting, budding; care of young plants; improvement of varieties; management of commercial and farm nursery; modes of pruning; the orchard; fruit suitable for orchard and garden culture; the flower, vegetable and fruit garden; importance and mode of forest culture; shelter belts and their influence; weeds and useful plants; noting the species of trees worthy of culture, either for profit or ornament.

LANDSCAPE GARDENING.

The lectures on Landscape Gardening not only unfold the accepted principles of the art, but at the same time give special attention to such applications of the art as may be made universally available in laying out and improvement of farms and the homes of the people. These lectures are accompanied by a practical drill in in the work of laying out and plotting grounds topographically.

CHEMICAL DEPARTMENT.

PHYSICS.

This includes a full consideration of the laws of mechanics, of liquids, gases and vapors, weights and measures, and specific gravity, followed by experimental study in the Physical Laboratory of the laws of heat, light, with spectrum analysis, electricity and magnetism, and the relation of these forces to plant and animal life. Text-book, Ganot.

INORGANIC CHEMISTRY.

This course is opened with a careful study of chemical forces and the laws governing chemical combination. The elements, with their compounds, are next considered in succession as to their history, properties, manufacture, and especially with regard to their uses on the farm and in the arts. These lectures are accompanied by an extended course of laboratory practice in which each student performs every experiment with his own hands. Text-book, Eliot & Storer.

ORGANIC CHEMISTRY.

This comprises a thorough study of the chemistry of the organic compounds, the composition of plants and of the various compounds derived from them. Constantly accompanied by laboratory practice.

CHEMICAL ANALYSIS.

In this course each student is furnished his stand in the Qualitative Laboratory, completely furnished with apparatus and chemicals for his own use. He here performs analyses of farm soils, plant ash, commercial manures, ores, mineral waters, commercial compounds, etc. After completing this course, he enters, if he desires, the Quantitative Laboratory, where he pursues a full course in quantitative analysis. Text-book, Kedzie's Manual.

AGRICULTURAL CHEMISTRY.

This includes a thorough consideration of the application of chemical principles to the economy of the farm; the origin and formation of soils; the classification and composition of soils; the analysis of soils and their adaptation to purposes of production; the composition and use of manures; composting; chemistry of farm operations, such as plowing, fallowing, draining, etc. Text-book, Johnson's "How Crops Feed."

METEOROLOGY.

Embracing the composition of the atmosphere; atmospheric pressure; temperature and humidity; laws of storms; rain, snow and atmospheric electricity. A full course in meteorological observations is taken under direction of the Signal Service. Text-book, Loomis' Meteorology.

MINERALOGY.

This includes the study of the laws of crystallography, with the properties, forms and uses of the principal minerals of the United States. Blowpipe analysis forms a very important part of the course, each student being required to name and identify a large series of minerals. Text-book, Dana's Mineralogy.

HOUSEHOLD CHEMISTRY.

A course of lectures on this subject is yearly delivered to a class of young ladies. The course embraces the chemistry of cooking; the composition of food; bread; tea, chocolate and coffee; butter and milk; ripening and preservation of fruits, etc.

SPECIAL COURSES

Are constantly in progress in Assaying, Pharmaceutical Chemistry and Photography.

ENGLISH LANGUAGE.

Words are simply tools used to express ideas; and, since the vast majority of our communications are made by the employment of spoken or written words, skill in using them is as profitable to the industrialist as dexterity with the needle is profitable to the seamstress. The direct aim of the course is to make the student skillful and intelligent in handling the machinery called language, just as an engineer handles a locomotive; and no drill will be omitted, or effort spared, to gain this end. Apart from the course itself, which is far more practical and complete than that usually found in literary colleges, the constant attention given this subject by all the departments, and especially the practice required in the printing classes, affords superior advantages to the student.

DRILL IN ENGLISH.

"As grammar was made after language, so ought it to be taught after language."—*Herbert Spencer.*

Drill in English embraces the following topics:

Sounds of the language; drill in producing the vocal, sub-vocal and aspirate elements with accuracy, distinctness and volume; vowels, consonants.

Letters: Form; power; rules for spelling, drill.

Words: Signification, properties, modifications, variations, relation and dependence.

Sentences: Drill in statement of ideas; description, clearness, terseness, vigor; business letters, discussion; capitalization; syllabication; punctuation; construction and analysis of sentences; elements, uses and names; criticism of compositions printed as written; proof reading; grammatical construction; superfluous words and clauses; drill in reading, speaking and penmanship.

Text-books: Webster's Academic Dictionary; Lee & Hadley's Advanced Lessons in Language.

Pupils deficient in spelling, etc., should enter the printing class, the printing-office being the work-shop of language.

STRUCTURE OF ENGLISH.

ELEMENTS OF WORDS.—The end aimed at in this study is to learn everything about words which will aid in their effective use. Among the topics included are:

Roots: What are they; their origin; their force and value as an element of language; the manner of their growth into different parts of speech.

Stems: Their derivation; their offices and properties; their relation to other parts of words.

Prefixes and Suffixes: The several sources whence derived; the relation of their force or significance to those sources; explanation of the laws and principles governing their use along with stems.

Compounds: Their value; their properties and uses; the laws governing their formation.

Synonyms: Definitions; causes of their abundance in English; the principles to be observed in choosing among them, to express a thought.

Criticism: This constitutes a prominent part of the exercises of the pupil through his whole course in the study of English. It not only diversifies and enlivens the class-room exercise, but reduces to practice the principles of the structure of the language. By this means, the student acquires not only a knowledge of English, but readiness and accuracy in speaking or writing it. The exercises in criticism embrace not only examination of selected matter, but original composition.

ELEMENTS OF SENTENCES.—The purpose in view in studying this subject is not to traverse the ground gone over in the study of grammar, but to fix in the mind of the student a clear understanding and remembrance of names, the properties and offices of the several classes of words entering into an English sentence, by showing him the reason of things; to make more simple, as well as interesting and practically useful, a study otherwise "dry and unprofitable" in many cases, by explaining the reason of the verbal forms and changes, the rules and maxims he is to remember and observe in his use of language. In the same manner he is conducted through a study of the mutual relations and dependencies of the several elements making up a sentence.

MATHEMATICAL DEPARTMENT.

Figures and lines, like words, are only instruments with which to convey ideas, or perform operations that cannot be easily done without them. The arithmetical principles used in business are few and simple; but accuracy and rapidity in computation are only gained by practice. College graduates often fail to retain clerkships, not because they do not know *why* given operations are performed, but because they can neither add, multiply or divide with that habitual correctness which renders their work reliable.

DRILL IN ARITHMETIC.

The chief design of this study is to make the student expert in the use of numbers, as employed by the industrialist for profit. The occupation of a successful farmer demands the application of every principle of practical arithmetic, and is taken as a starting point, rather than that of an abstract system. Beginning with a simple cash account, book-keeping is gradually developed to the full extent of its real utility. The areas of fields, expense of crops, construction of houses, sales of produce, and investment of capital, involve all the fundamental operations, and those of profit and loss, commission, taxes, insurance, exchange and stocks. Following this line, the student, so far from hammering away at "pure" science draws from the mathematical store-house what he needs, and sees why he needs it. Accuracy of calculation and posting, rather than a *mere* comprehension of the principles, is aimed at. Besides the recitation-room drill in business forms, practice in the field is also given. Estimating the number of cords in a pile of wood said to be 100x4x4 feet is one thing; measuring a pile of wood through which any number of cats may be harmlessly thrown, and in which four-feet sticks are the exception, is quite another and more difficult thing.

ARITHMETIC AND BOOK-KEEPING

Is a continuation of the above, having the same purpose and adopting such methods as the necessities of the class indicate. Thorough instruction in the principles and forms of business law is given. It will be seen that this method of teaching book-keeping, besides ensuring arithmetical practice, develops practical skill in that important art.

ALGEBRA.

Algebra is included in the course as a preparation for the study of Surveying.

DRAWING.

The practical value of Industrial Drawing can hardly be overestimated, first, because its study is the best drill for the development of the perceptive faculties, which are the ones most employed in daily life; and, second, because the working classes make a far greater use of lines than they do of figures. A farmer follows a line when laying a straight furrow; the carpenter uses the square and rule twenty times as often as he does figures; and a woman in cutting a pattern, or deciding that one bonnet is prettier than another, does so by the line or "form." So that either in its direct application, or in the exercise of that taste which comes from skill in using lines, this branch of mathematics is quite as important as a means of "mental discipline" as is the branch of computation, and is of far greater daily use. The admiral system of Prof. Walter Smith, Art Director of Massachusetts, is thoroughly followed through the grades of Free-hand, Geometrical, Object, Model, Perspective, Mechanical and Topographical Drawing, during the terms indicated by the Course of Study. In addition, constant practice in the application of lines to metal and wood is furnished in the Blacksmith, Carpenter, Turning, Scroll-sawing, Carving, Engraving and Printing shops, and to fabrics in the Sewing Department.

PRACTICAL GEOMETRY.

Not one farmer in a thousand ever uses the transit in surveying his land, the testimony of the county surveyor being decisive in court; but every farmer makes countless applications of lines and angles in laying off fields, roads, gardens, planning houses, determining levels, etc. The object of Practical Geometry is to teach the properties and uses of angles, and to make the student skillful in the application of lines to the field by the use of such simple instruments as are always within reach, or within his ability to construct; and accurate in the transferring of plans to the grounds, board or block.

PRACTICAL SURVEYING.

The drill in the use of figures and lines given by the mathematical course as above indicated, renders the mastery of surveying an easy task. There is no calculation made or formula used by the working engineer which cannot be readily understood and performed by a skillful arithmetician after proper instruction. The hand-book of the engineer is accordingly supplemented with such special guidance as is found necessary for a full comprehension of the mathematical principles and their applications; and extended field practice is required in the use of the compass, level, transit and theodlite.

STUDIES SPECIAL TO WOMAN.

Besides the studies already indicated, attention is called to the following:

SPECIAL HYGIENE.

As shown in the course, one term is devoted to the study of Physiology, from the text-book of Dr. J. C. Dalton. This is followed in the fourth year by a course of lectures to young ladies by Mrs. Cripps on the subject of Hygiene, embracing such instruction in hygienic matters as are valuable to woman.

FARM ECONOMY considers those affairs of the farm which usually come under the supervision of the farmer's wife or daughter, and which are not included in "gardening" or "household economy;" such as butter and cheese-making, dairy management, etc. A course of lectures is delivered by the Professor of Practical Agriculture. See heading, "Farm Economy."

GARDENING is included in Practical Horticulture. See heading, "Landscape Gardening."

HOUSEHOLD CHEMISTRY. See heading, "Household Chemistry."

HOUSEHOLD ECONOMY

Follows Household Chemistry and consists of lectures by Mrs. Cripps in the art of house-keeping, embracing cookery, domestic management, and kindred topics. Many elderly gentlemen sufficiently know, and more young gentlemen will duly discover, that systematic knowledge of how cooking ought to be done is luminously different from the ability to do it. Instruction without practice can effect but little. Accordingly a kitchen laboratory has been completely furnished, and affords every facility for drill in the art of cooking. This drill chiefly differs from that of a kitchen in the respect that after a girl has learned to wash dishes or pare pototoes she is not kept everlastingly at either. After full trial we have found it just as feasible to give this practice, with profit and pleasure to the pupil, as it is to give laboratory practice in chemistry—and no more expensive.

THE INDUSTRIALIST

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INDUSTRIAL EDUCATION.

Not the least of the things of which Kansas has a right to be proud is its magnificent educational system. At the start a wise and vigorous policy was adopted for the education of its youth; and ever since, whether in war or peace, poverty or plenty, the State has steadily developed and carefully fostered its various educational agencies. In addition to its munificent endowment of the public schools, it has provided higher institutions for three distinct kinds of instruction, namely, normal schools for the special training of public school teachers; a university for the education of those proposing to enter the professions of law, medicine or theology; and an agricultural college for the practical education of those who will engage in any of the "industrial professions or pursuits," as distinguished from the "learned professions." The relative demand for the three forms of education is indicated by the proportion in which the citizens of Kansas follow these vocations, as shown by the last United States census. Of every one hundred persons engaged in a vocation by which money is gained, the ratios were as follows:

Normal education:		
Teachers	1.13	= 1.13
Professional education:		
Ministers	0.43	
Lawyers	0.55	
Doctors	0.73	= 1.71
Industrial education:		
In agriculture	59.13	
In manufacturing and mechanical	14.63	
In personal service	13.89	
In trade and transportation	9.51	= 97.16
		100.00

AGRICULTURAL COLLEGE.

Recognizing the need for an education which should especially prepare the rising generations for an intelligent and successful practice of those vocations which are followed by ninety-seven out of each hundred of its citizens, the first institution endowed and put in operation by the State was its Agricultural College, so named because of the fact that agriculture is, both numerically and actually, the chief of these vocations. The title, "Agricultural" College, is apt to mislead those who are not familiar with the above fact, and also with the further fact that the acts of both Congress and of Kansas provide for an "industrial," as distinguished from a "professional" education.

ENDOWMENT.

The endowment received from the United States Government consisted of 81,601 acres of choice land, all of which had been sold at date of last report, except 31,461 acres now on the market. The proceeds from the sale of lands are invested in school bonds, and the securities in hand amounted to $238,101.28 by last report. The annual income from this endowment is about $20,000, out of which all expenses of instruction are paid. The only aid received from the State is for the erection of buildings, in accordance with the conditions of the congressional grant. This is the only one of the State's institutions which is not dependent upon the tax-payer for its maintenance.

LOCATION.

It is situated one mile from Manhattan, Riley county, one hundred and twenty miles west of the Missouri River, in the heart of the finest agricultural State in America. The Kansas Pacific Railway, with its connecting lines, gives speedy communication with every quarter.

COURSE OF STUDY.

The course of study is shaped with direct reference to giving an industrial as distinct from a professional education. It makes the pupil intelligent and expert in the use of the English language; in the use of numbers as employed by the farmer, book-keeper and engineer; and in the use of lines as employed by the carpenter, painter and architect. Words, figures and lines are tools which all men use. It then gives thorough instruction and laboratorial or field drill in the following sciences as essentially useful to an intelligent and successful farmer: Physiology, Practical Agriculture, Natural Philosophy, Botany, Entomology, Practical Horticulture, Landscape Gardening, Inorganic Chemistry, Organic and Analytical Chemistry, Surveying, Geology, Mineralogy, Zoology, Meteorology, Agricultural Chemistry, Political Economy, Practical Law and Logic. It has an equally practical and effective course for the education of woman as a woman, instead of as a man, and as a worker instead of as a butterfly. Then, it has a well-stocked farm and nursery, and well-equipped shops, for giving boys practice in farm and nursery work, and in wood and iron work, and for giving girls drill in dress-making, printing, telegraphy, carving, engraving and music.

Our System of Education.

The Indiana *Farmer* has compiled the following opinions, all from excellent authority, on the imperfect and vicious system of our public school education. The public mind is becoming convinced of the great defects of the system and demanding a reformaton.

Millions are annually wasted on ornamental education, by public and private schools, which would be much better applied in the mode indicated in the following paragraphs. If our public schools attempted to teach only those rudimentary branches which are in use by nine-tenths of the laboring and business population, and the balance of the money was applied to instruction in manual labor, there is scarcely room for a doubt that three-fourths of the drunkenness, idleness and crime would disappear from the community.

Prof. Stuart, of Cambridge University, England, says that the industrial and labor schools are a neccesity. A bill, providing for these, was last spring defeated by Parliament by a few votes only. The London *Times* and other journals in that country maintain that this step must be taken.

The safety of this nation lies in industry and, therefore, contentment of the people. This can only prevail when the people have been educated and trained in practical industry. But the great obstruction lies in the training and methods of the schoolmen. They run in ruts. They were trained that way, and know no other. They oppose all others, as a rule, because they have neither taste, fitness nor comprehension of any other.

Col. Forney, in a letter to the Philadelphia *Press*, from the Paris Exhibition, a few weeks ago, says: "Germany, Switzerland and France have methods and systems that deserve to be studied. Even Russia may be a model for all of us. Yesterday I saw some Russian machinery at the exhibition; and my admiration increased as I was told that much of this exquisite work was made by the youth, many of them sons of the best families, sent into the machine shops to learn trades as a part of their education. There was no alternative; they were compelled to pass this ordeal. The government is the master, and young Russia must obey; and obedience becomes a delight; and it is as much the fashion to finish a practical education in this way, as it formerly was the fashion to pass through a school, or academy, or college, for the easy acquisition of superficial accomplishments."

There is a very considerable awakening to the importance of this matter in all quarters. The President of the National Teachers' Association, Hon. A. Newell, in his address before that body, said: "Our public school system cannot be regarded as complete until the department of manual labor is added. State education must teach the children to work, without which they can never become good citizens. They must live by labor, and the schools must help them."

The Superintendent of Public Instruction of Pennsylvania, Mr. J. P. Wickersham, says: "I am not sure but that if half the money expended in our city schools were expended in the erection of shops to teach the boys and girls trades, it would be better."

In the 41st report of the Massachusetts Board of Education, that body urges that, since the extinction of the apprentice system, the welfare of the people and public safety of the nation demand that our public schools train both the head and the hands of their pupils at the same time.

Rev. Edward E. Hale, in urging technical education, as well as mental training, says: "All that our average boys are fit for, on leaving the schools, is to be newsboys, or cash boys in the great retail shops, or to peddle lozenges."

The Boston *Post* says: "The impression is almost universal that we must supplement our public school system by industrial training. Our boys to-day, on leaving the common school, are left for years a burden to their parents."

The Philadelphia *Times* says: "Nine-tenths of the young criminals sent to the penitentiary have enjoyed our boasted free school system, but three-fourths of them have never learned to do an honest stroke of work. Surely there must be something wrong with a system which thus recruits the army of idlers and criminals." Speaking of the same class, the Philadelphia *Telegraph* says: "Society has developed their mental powers to a point that they are above devoting themselves to occupations that they would be perfectly willing to follow, were they uneducated."

Gov. Hartranft, of Pennsylvania, in his annual message, in urging the subject upon the attention of the legislature of that State, said: "I renew my recommendation, contained in my message of 1875, for the establishment of workshops in connection with industrial schools."

Theory With Practice.

It is a fact which we may as well acknowledge, that scientific knowledge when applied to farming is nothing more nor less than an application of facts. In order to be a successful farmer in the fullest sense of the term, one must, for instance, be in one sense a theoretical and practical geologist, in order that he may discover what the mineral constituents are; whether the most needed ones are in surface or the subsoil, and whether the desired substances are to be found on any other part of the farm. This, to the practical farmer, is as important in its ultimate results as the account of stock taken by the merchant or manufacturer when commencing business. The good husbandman should understand the principles of vegetable physiology, and the nature and structure of plants. He who would be the most successful stock breeder should, other things being equal, possess a thorough knowledge of the laws relating to breeding and cross-breeding, and possess at least some knowledge of veterinary science and surgery. He who would grow fruit successfully must be, to some extent at least, a professional as well as a practical entomologist. How else can he form an intelligent idea as to what are noxious and what are beneficial insects? It is estimated that out of the whole number of insects that have been described in entomological works, at least one-fourth of them are the friends and allies of the fruit-grower. Without the knowledge so essential, he will indiscriminately slaughter thousands of harmless insects in his efforts to destroy infamous ones.

The fact is, there is no occupation wherein professional knowledge can be utilized to better advantage than in that of farming, when it is conducted as it should be. Let us then do everything we can to educate the young man in the first and best of all callings, that of agriculture. Let us do everything we can to promote special education in this direction within the Grange, by reading, study, observation, reflection and discussion. Let us do everything we can to make our agricultural colleges a success. It is said that the agricultural colleges of Germany have increased the value of lands therein three hundred per cent since their establishment, by reason of a more general diffusion of agricultural knowledge. If the practical application of this kind of scientific knowledge in that country has produced such an effect, then what may we not expect it to accomplish in this?—*Bulletin.*

Agricultural Progress.

America has a right to be proud of her farms and farmers. No business has been advanced more rapidly, and no class have shown a greater willingness to learn and to adopt new methods. It is very true that more progress could have been made, but is that not true in everything? We are such creatures of habit that the new is slowly accepted at best. No doubt the cradle had a cold reception at first, and many a man, doubtless, clung to the sickle and prophecied a complete failure of the new-fangled thing, which was intended to usurp its place. Then came the reaper to drive the cradle from the harvest field, and the defender of the sickle was now the defender of the cradle as against the claims of another patent arrangement; and so on through the whole list of improvements in farm machinery. But this is human nature; yet the progress made in agriculture has been wonderful to contemplate, and a greater progress still awaits us, and in the very near future, too.

Nature has dealt very bountifully with our country; it has given us every variety of soil and climate, and seems to have said: "Invent your machinery to gather the harvests, and the harvests will be ready." And American genius has not been slow to accept the invitation. Not only has it invented the necessary machinery, but it has gone to work to aid nature in increased and more bountiful productions, until every department of agriculture is adorned with remarkable beauty and utility. In the new West, our advance has been so rapid that we are astonished ourselves, although the proneness to hold to old styles and methods, before mentioned, is the cause of this to a very large degree. The truth is that the possibilities of our agriculture are well-nigh limitless, and we should cease being astonished until every farm is a garden, and every old-fashioned plow, which now in comparison with improved plows is little better than a crooked stick, shall be supplanted by the best, and every animal shall be of our best improved breeds; and even then there will be no cause for astonishment.—*Western Rural.*

Don't Learn a Trade.

No, don't learn a trade, young man. You might soil your hands, wilt your shirt-collar, and spoil your complexion sweating. Go hang your chin over a counter; learn to talk twaddle to the ladies; part your hair in the middle; make an ass of yourself generally; and work for wages that wouldn't support a Chinese laundryman on rice-fed rats, and leave a big enough balance to his wash-woman—just because it is a little more genteel in the eyes of people whose pride prevents them from pounding rock or hewing wood, and whose poverty pinches worse than one of those patent cross-legged clothes-pins, if the truth were only told.—*Elmira Gazette.*

PROF. POPE, of the Iowa Agricultural College, says the only gain in cooking food for swine is in the increased palatability of the food, tempting the animal to eat more, or in some cases to take what he would reject. If it does not do this, the farmer "has his labor for his pains."

THE silk manufacture of the United States is steadily encroaching on the foreign importation. The annual value of silk ribbons exported by Switzerland to this country has fallen off in the past five years from 20,000,000 francs to 5,000,000 francs. The superior quality of American silk fabrics is one of the chief causes of the diminished importation from France, Italy and Switzerland. In a few years, the United States will beat the world in many industries.

THE INDUSTRIALIST.

SATURDAY, JANUARY 18, 1879.

JNO. A. ANDERSON, Managing Editor.

ASSOCIATE EDITORS, MEMBERS OF THE FACULTY.

FROM extracts of the annual report of the deaf-mute institution of Kansas, we glean that its industrial departments are a success. Everything connected with these departments is encouraging, and has more than met the expectations of its most sanguine advocates and friends; and it can be predicted from these indications that the departments, when thoroughly equipped and organized, will not only be self-sustaining but productive of a small revenue to the State. We are glad of this. It sustains our own views of practical education. How much better for individual and State, if the pupils of such institutions can go forth into the world, not only fitted for society by education and general information, utilized by a ready use of the pen and pencil, but also able to encounter the stern realities of life, and hew out for themselves a livelihood and a fortune.

IN the report of the Massachusetts Institute of Technology we find the following passage: "It cannot be denied that a large proportion of high schools continue to maintain classical departments for the purpose of fitting students for admission to college, at a cost altogether disproportionate to the end gained. It would be far more economical for each town to support the few students who enter universities from its high school at a good classical school, and thus save the time and energies of the best teachers for other subjects of growing importance,—as the modern languages, mechanical and free-hand drawing, chemistry and physics with laboratory practice, and such elements of natural history as the teachers of each school may be best fitted to give." We wish that we could lay this passage, neatly printed in law pica, on the breakfast tables of several hundred dozen members of high school boards.

Drawing, Again.

Every drawing teacher has observed the great difficulty which beginners experience in getting the primary diagram of figures, whatever character these may have, sufficiently accurate to permit "lining in" and finishing. To allow errors in this first step, will make all subsequent steps a failure, too; and the result is an educational loss altogether too great to be risked. It is self-evident that the eye cannot be trained into truthful perceptions by letting it get accustomed to its own imperfections. Some authors of text-books on industrial drawing try to overcome this difficulty by ruling the blank pages horizontally and vertically, thus dividing them into equal squares. (Willson, Thalman). For numerous reasons, however, I am bound to disapprove of this system, except for very weak beginners and the pupils of kindergartens. I would, for the purpose of correcting primary diagrams, boldly take to the use of compasses or other measuring instruments; and, in turn, discard all exercises involving in their finish many straight or circular lines. I do not advocate the use of tools to save the exercise of judgment, but to correct the inaccuracy of the eye, wherever it needs correcting; just as we permit the use of a dictionary by the student of language. In addition to this, I would allow pupils to shift the drawing book to any desirable position, restricting them only from turning the book upside down. The reason for this is simply the impossibility for the human arm and hand to draw many different kinds of curves from the caligrapher's position. Arm and hand are a complex machine oniy,—a machine that can perform a great many movements easily enough, while other and perhaps very similar movements cannot be performed at all.

If we observe the artist in his studio or the artisan in his workshop, we find that both, in drawing the outlines of their objects under progress, resort to every resource of mechanical assistance which they can reach, reserving their skill and power for those parts where mechanical means can not be employed and human skill is absolutely necessary. Artists and artisans know that it is impossible, except by accident or mechanical assistance, to draw either a straight line or a perfect circle; though, of course, to draw lines approximately straight or circular, is not difficult of attainment and not of extraordinary value when acquired. Professionalists depend on ruler and compasses, when straightness or roundness is to be relied upon. Again, if we observe their standpoints when they are planning or working, we see them change constantly to bring their hand and arm in the most favorable position. Often we see them shift or turn their objects. It is very true that in many cases the position of the hand is still an awkward one. It may happen that neither object nor arm can be placed to satisfy them. Yet, these cases are generally not very frequent.

This we observe in practical draughting-rooms, in studio and shop. Our pupils, however, are asked to rely on hand and eye only. We prohibit the use of all measuring and other tools. We nail the chair down to the floor, and would screw the book to the desk, if we could—due north and south. Then, after taking from them all chances of success, we want them to imitate the work of trained and skilled experts. Is it not natural that so many fail to make headway, and ultimately begin to hate the study? Some pedagogues, among them my own teacher, say: "It is for the sake of discipline." But who would attempt to fell a tree with a hatchet for the sake of discipline, when he could chop up a half a dozen in the same time with a good steel ax? If you want discipline, do a greater amount of work, and do it in a natural style. Instead of making the study as difficult as possible, make it easy and pleasant; the results will be richer by far.—*Prof. J. D. Walters.*

Students Enrolled Since Jan. 3, 1879.

NAME.	COUNTY.
Adams, Emma L.	Riley
Abbott, Frank	Riley.
Allen, Albert H.	Nemaha.
Allen, Chester	Mitchell.
Axtell, Frank D.	Pottawatomie.
Axtell, Fred W.	Pottawatomie.
Ayres, Sarah	Shawnee.
Barnes, E. M.	Osage.
Bates, Charles W.	Vermont.
Bayles, Benjamin B.	Riley.
Beacham, Augustine	Marshall.
Blain, Arthur T.	Riley.
Breakbill, John	Riley.
Buchli, Bartholomew	Wabaunsee.
Buell, C. Stewart	Riley.
Buell, Delight A.	Riley.
Call, Henry L.	Shawnee.
Call, Charles M.	Shawnee.
Campbell, Emma	Riley.
Campbell, Ettie A.	Riley.
Campbell, May	Riley.
Chenoweth, Charles C.	Cherokee.
Chenoweth, J. W.	Cherokee.
Clarke, Ezra S.	Riley.
Clarke, Hattie P.	Riley.
Clarke, Mary	Riley.
Coburn, Ella	Saline.
Coleman, Edward P.	Iowa.
Cowell, William J.	Clay.
Cox, George A.	Riley.
Cox, Lizzie R.	Riley.
Cripps, Edward V.	Riley.
Culter, Horace M.	Sedgwick.
Dickson, A. F.	Johnson.
Donaldson, Alvin	Butler.
Donaldson, Flora	Butler.
Donaldson, George	Butler.
Durkee, Annette	Lyon.
Durkee, Orpheus	Lyon.
Eckman, Wilmer K.	Osborne.
Edmiston, Dora	Illinois.
Everhart, Logan W.	Labette.
Farnsworth, Henry E.	Lincoln.
Favour, William P.	Greenwood.
Flack, John B.	Dickinson.
Gist, John M.	Riley.
Gist, Joseph T.	Riley.
Glossop, Emma	Riley.
Goin, Edgar L.	New York.
Gordon. George A.	Jackson.
Griffing, William J.	Riley.
Gross, W. E.	Saline.
Hicks, Wm. G.	Cherokee.
Himes, Hattie	Riley.
Hopkins, Harry H.	Butler.
Hotchkiss, Charles S.	New York.
Hoyt, Emma	Riley.
Hulett, C. M.	Johnson.
Humphreys, George	Sumner.
Hunt, Henry L.	Cherokee.
Hunting, Cora M.	Riley.
Hutsell, Sallie	Cherokee.
Jacobs, James H.	Cherokee.
Jaquith, Walter W.	Davis.
Jeffrey, William J.	Riley.
Jeffrey, Fletcher	Riley.
Jewell, Fred	Butler.
Kent, John H.	Riley.
Keyes, George C.	Wabaunsee.
Kingsbury, Eddie L.	Coffey.
Kinsey, Dora	Shawnee.
Knipe, George D.	Riley.
Knostman, Emma	Riley.
Leach, Darwin S.	Mitchell.
Lewis, Issie	Riley.
Lewis, Jno. W.	Riley.
Light, Willis	Neosho.
Limbocker, Clyde	Pottawatomie.
Limbocker, Clarence	Pottawatomie.
Luse, William P.	Missouri.
Lynch, Fred C.	Cherokee.
Mails, Mattie	Pottawatomie.
Mann, John	Rice.
Mason, Silas C.	Ottawa.
McBratney, William	Nemaha.
McGuire, Katie I.	Johnson.
McNair, Alice E.	Wabaunsee.
McNair, J. L.	Wabaunsee.
McNair, S. E.	Wabaunsee.
Messenger, Charles	Cowley.
Miller, Edgar	Davis.
Millikan, Minnie E.	Johnson.
Mills, Hattie L.	Missouri.
Moore, Thomas R.	Smith.
Morgan, S. M.	Lyon.
Morrow, John N.	Johnson.
Myers, Wirt S.	Allen.
Neiman, Charles	Nemaha.
Nelson, Cassius C.	Illinois.
Nelson, Henry	Ottawa.
Neusbaum, Ada A.	Riley.
Neusbaum, Lincoln H.	Riley.
Noland, Manda	Riley.
Noyes, Amy E.	Wabaunsee.
Noyes, Ida L.	Wabaunsee.
Outt, J. F.	Montgomery.
Paine, Edwin C.	Lyon.
Parker, Grace	Riley.
Peckham, Almira S.	Riley.
Pettit, D. C.	Cherokee.
Platt, Henry A.	Riley.
Platt, Jennie Smith	Wabaunsee.
Randel, Alta	Nemaha.
Randel, Charles F.	Nemaha.
Randel, Henry A.	Nemaha.
Records, C. M.	Chautauqua.
Reed, C. J.	Pottawatomie.
Reeve, Mark A.	Lyon.
Reynolds, Theodore	Riley.
Richards, Bettie	Pottawatomie.
Richardson, Noble A.	Wilson.
Robinson, Joseph N.	Shawnee.
Rose, George E.	Cherokee.
Rose, Wm. N.	Cherokee.
Rushmore. H. C.	Jefferson.
Rust, Charles	Atchison.
Salter, Lewis A.	Montgomery.
Shartell, Cassius M.	Chautauqua.
Short, Burton L.	Cherokee.
Sickels, Maria E.	Missouri.
Sigman, George L.	Chautauqua.
Sikes, Wm. H.	Pottawatomie.
Sloan, John A.	Clay.
Smith, B. B.	Dickinson.
Snow, Cora L.	Riley.
Spooner, Alice G.	Clay.
Stiles, Charles H.	Wabaunsee.
Strong, Grace R.	Riley.
Tarrant, Will S.	Cowley.
Thackrey, Isaac	Riley.
Thackrey, Sarah	Riley.
Thompson, George F.	Cowley.
Ulrich, Cora L.	Riley.
Vaught, Cora	Butler.
Vincent, Ella E.	Riley.
Wahl, Charles A.	Indiana.
Wahl, Fred E.	Indiana.
Wahl, Wm. H.	Indiana.
Walters, Rosette	Davis.
Welch, C. R.	Harvey.
Welch, J. C.	Illinois.
Whaley, Rowena	Riley.
Whaley, Willie E.	Riley.
Whiteside, Wm. A.	Cherokee.
Wilson, Elmer E.	Cherokee.
Wilson, J. E.	Shawnee.
Winder, Ivaloo	Riley.
Wood, Clarence E.	Pottawatomie.
Woods, Albert O.	Sumner.
Woodworth, J. W.	Cherokee.
Wright, Robert H.	Ford.

THE INDUSTRIALIST.

SATURDAY, JANUARY 18, 1879.

Number of students enrolled this term, 161.

A prominent educator in Texas writes to us in this manner: "We look upon your College as one of the best agricultural schools in the country."

Remember that Noble Prentis lectures to-night, at the Presbyterian Church, under the auspices of the Webster Society. Subject, "Funny Americans." Admission, 25 cents.

The following students have been enrolled since our last report: *Riley county*, Frank C. Abbott and Cora L. Snow; *Wabaunsee*, Jennie S. Platt; *Chautauqua*, Geo. L. Sigman.

A lady who visited the College some time ago, tells the *Nationalist* this week what she saw at that time, and what she thinks of the Institution. We have copied the letter, which will be found in another column.

The new building received this week a portion of its cast-iron roof ornaments. They improve the looks of the edifice so much that we are seriously thinking of a similar device for the head of one of our friends.

The following is taken from a letter lately received from the Hon. John A. Halderman, of Leavenworth. It explains itself: "I send by Governor Harvey, as a present to the College, a small bottle of water, taken by me from the River Jordan, on the 29th of November, 1872, at the Ford, near Beth-Hogla, and 'right against Jericho;' where John baptized Christ, and where Elisha, Elijah, Joshua and the Israelites passed over dry shod."

We have just received a circular announcing the publication of a new annual reference book for 1879. It is an "American Almanac and Treasury of Facts, statistical, financial and political." Edited by A. R. Spofford, Librarian of Congress. Bound in a handsome volume, 400 pages, scarlet cloth. Price, $1.50. This book is an encyclopedia of facts in regard to matters of interest in the United States. Coming from the source it does, the information it contains is reliable. There is in it the essence of hundreds of volumes of public documents and other books. If you desire a copy, ask your bookseller for one.

At a special meeting of the Alpha Beta Society, held in the College Chapel, Wednesday, Jan. 15th, 1879, the following resolutions were adopted:

WHEREAS, An all-wise Creator has seen fit to remove from our midst, Henry F. Coe, one of our most active and earnest members; therefore,

Resolved, That we, the members of the Alpha Beta Literary Society of the Agricultural College, do tender our sincere and hearty sympathies to the bereaved friends and relatives of the deceased.

Resolved, That a copy of these resolutions be presented to the parents of the deceased, and be published in the INDUSTRIALIST.

W. H. SIKES, President.

MISS EMMA GLOSSOP, Secretary.

Mrs. Whitney, wife of Solomon Whitney, living about two miles northwest of the College, died on Friday morning. She was afflicted with malarial fever, a disease which had previously attacked nearly every member of the family. Day after day, night after night, she had watched with her children in their illness, until they had all partially or entirely recovered. But they had been spared only to see the loving hands prostrated which had so tenderly cared for them. The death angel claimed her, and in spite of medical skill she grew worse until Friday morning, when her spirit took its flight. A bereaved husband and a circle of sons and daughters are thus left to mourn the loss of one whose place can never be filled. Mr. Whitney is an old settler, and the sad news of his wife's death will be received with the greatest sorrow by all who have known them in the years that are past. Nearly all the children of the family have at one time or another been students of the College, and we extend to them in this hour of their trial our heartfelt sympathy.

The Alpha Beta Society met Friday, the 10th, in Prof. Platt's room. Roll-call showed that but few of the members were present; however, the missing links soon appeared, as did also many others, until the room was full to overflowing. The Marshal was obliged to bring in three benches from the chapel; and as there was not room for any more benches, the people wisely quit coming. But we believe no one went away because he could not obtain a seat. The officers elected last week were installed. The ex-President delivered a sensible valedictory and the new one a rousing inaugural. After a desperate struggle, and at the expense of much eloquence, two of the three judges decided that the national war debt should not be repudiated.

The *Gleaner* was presented by Gus Platt, and certainly showed care in editing. We hope that when Gus grows up and becomes editor and proprietor of a paper in this real and active world, he will look back with pleasure to the time when he commenced by editing the *Gleaner*.

Extemporaneous speaking was lively as usual. Two persons were initiated and two names proposed. The Society is truly in a prosperous condition, so come everybody and enjoy a pleasant and profitable afternoon. HOMBRE.

The Webster Society met last Saturday evening, with President Hulett in the chair. All the officers mentioned in our last report, except Mr. Lynch, were inaugurated. The Society then discussed what is familiarly known as the "Greaser" question, or, in other words, "*Resolved*, That the acquisition of Mexico would be detrimental to the interests of the United States." Affirmative, Reeve and Morrow; negative, Beacham and Leach. Decided in favor of the affirmative. The question for discussion next evening is, "*Resolved*, That a man will never forget anything once learned." Affirmative, Wood and Mason; negative, Hulett and Mann.

The committee on lectures reported that all the necessary preparations had been made, and that everything was in working order. The extemporaneous speaking was lively and spirited. Under this head, the question, "Is man the architect of his own fortune?" excited the most discussion, and was handled in a manner which showed that a majority of the speakers were not believers in "luck," but believed that every one should take time by the forelock and hew his own way to fortune and honor.

We had a very interesting and profitable session. A number of visitors were present, and most of them took part in the speaking. We like to have visitors come, and will show them all that courtesy and hospitality for which the Websters are justly noted. LEACH.

ABOUT THE COLLEGE.

VIRGINIA CITY, Nevada, Jan. 9th, 1879.

Editor Nationalist: — While in Manhattan a month ago, I was invited by two of the young lady students to visit the Agricultural College. Accordingly, I walked up there one forenoon, accompanied by a friend. We arrived too late to see the students at work, except a few in the Industrial Department; but our visit was nevertheless most satisfactory.

We were so fortunate as to be guided through the several departments by the wife of the President, who, with the utmost kindness and courtesy, and in the clearest and most intelligent manner, showed us the entire plan upon which the Institution is worked. Of the fitness of that plan to the needs of those for whom the Institution was designed, I cannot speak in too high terms. Nothing better can be done for the young anywhere than to enable them to understand and perform intelligently the work which lies at their fingers' ends; and I think that is just what the Manhattan College is doing for the youth of Kansas,—giving them the practical knowledge necessary to life in the West.

My hopefulness in the sound influence which the College will exert, if it keeps to the path which President Anderson has laid out for it, is unbounded. It is to be hoped that the advent of a new President will not be the signal for a change of method. S. A. T.

DIED.

COE—At Manhattan, Kansas, Wednesday morning, January 15th, 1879, of malarial fever, HENRY F. COE; aged 17 years, 5 months, and 12 days.

Henry F. Coe was born August 3d, 1861, at Indianapolis, Indiana. Spent his early life at and in the vicinity of St. Louis, Mo. Recited lessons to his mother, never attending school until he was fifteen years of age, when he passed an examination and entered the highest grade of the Clinton School, of St. Louis. He remained at that school for one year, when he graduated with the highest honor and came with his mother and sister to Manhattan, for the purpose of attending the Agricultural College. He passed his examination, entered the College as a second-year student in the fall of 1877, and has been connected with the Institution ever since.

Frank, truthful, generous and earnest as a student, he was much respected by his fellow-students and Professors, and always maintained a high standing in his classes. About one year ago, he stood up in the College prayer-meeting and stated his purpose to become a christian, and frequently took part in the meetings thereafter. The second Sabbath in February last, he stood alone in the Presbyterian Church and took upon him the vows of God; having gone down to the Church the Friday evening previous, alone, through a heavy storm, to pass his examination before the session.

He was taken sick with fever near the close of last term, but was not thought to be seriously ill, and was apparently recovering, when the fever returned, about a week before his death, and he gradually grew worse until he died, Wednesday morning, January 15th, at half-past three o'clock, with a firm trust in Jesus. He had been delirious for several days, but his consciousness returned on Tuesday, when he selected his pall-bearers.

The funeral was attended by nearly all the students and Professors, and many other friends, at the Presbyterian Church, at ten o'clock A. M., on Thursday, the 16th inst. The President of the College delivered a tender and appropriate address. The students and faculty then marched with the body to the depot, where it was placed upon the cars to be taken to the place of his birth.

As soon as his mother and sister are able, they, with the father, will go to Indianapolis and there bury the body. The parents and sisters of Henry have the deepest sympathy of the students and faculty, as well as the members of the Church with which he was connected, and many other friends.

NATIONALIST ITEMS.

Mrs. Prof. Ward has been quite ill and under the doctor's care, but is now convalescent.

Thirteen cars of stock were shipped last Thursday and Friday, by Messrs. Adams, Higinbotham and Tuttle.

At 8:10 A. M., Monday last, our postmaster had sold 1,275 postal cards,—and no one person took more than one hundred.

It is a violation of the law, in this State, to kill quail after the first of January. Sportsmen had better take notice. It is also unlawful to expose these birds for sale after that date.

Prof. D. Hungerford was sworn into the office of Probate Judge on Monday, and is now temporarily occupying Capt. Spilman's office, while the latter is attending the Legislature.

Another storm of snow, rain and sleet on Tuesday night. It has been predicted that the December snow would last until March, and it looks as though it may not fall short many weeks.

The many friends of Miss Sebia Mudge will be sorry to hear that she has accepted the position of music teacher in the Atchison Seminary for ladies. We have heard this institution quite highly spoken of, and presume we should consider our loss as their gain.

Gen. Casement and family have returned from a two weeks' sojourn in and about Denver. The General has shipped several kegs of water to a friend in Denver, who, while visiting this place, had, from the use of this water, experienced relief from a disease of the bladder. This is another evidence of the superiority of Kansas.

DIRECTIONS TO APPLICANTS.

TERMS OF ADMISSION.

Candidates for admission must be fourteen years of age, and pass a satisfactory examination in reading; arithmetic, through decimal fractions; and English grammar, to syntax. Classes are started at the beginning of each year in Drill in Arithmetic and Drill in English; and the pupil must have the knowledge above indicated, else he will be unable to retain position if admitted.

Pupils will be received at any time during the year, if able to pass an additional examination upon the subjects studied by the classes which they expect to enter. But they will find it greatly to their advantage to be present at the opening of each term, or as soon thereafter as possible.

GRADES.

Both the Literary and Industrial recitations are graded daily upon a scale of 100; and an examination of all classes is made at the close of each month. A student not attaining an average grade of sixty is promptly dropped to a lower class, or excluded from the Institution until able to do so. The work of grading is strict and uniform in all the departments, and this process is rigorously used for sifting out incompetent and indolent pupils; thus more than accomplishing all that is designed to be effected by a "high standard of admission." Hence, the student's continuance in the College wholly depends upon his own action.

The course is based upon the determination to make the labor required in the preparation of one industrial and three literary recitations as much as the average student can perfectly perform, in ten hours a day. We design to give the pupil the worth of the time expended at College; and, in order thereto, he must do a full day's work with brain or hand. Only those students who can maintain a standing of ninety in each study will be allowed to take more than the prescribed number of recitations; and no one will be permitted to have less than one industrial and three literary recitations.

RELIGIOUS.

Unless otherwise directed by parents, students are required to attend chapel at 8:30 A. M. on academic days, and divine service once every Sabbath.

EXPENSES.

There are no charges whatever for enrollment, attendance or instruction in the regular courses; nor are there any "contingent fees" for the repair of buildings, for the use of books or apparatus, for diplomas, or the kindred privileges usually grouped under the term "contingent." Male students are furnished instruction, the use of apparatus, instruments or tools, in both the literary and industrial classes marked out for them, without any charge. And the same is true of female students in the regular classes provided for them. Printing and Telegraphy are industrials primarily provided for the education of female students, and male students taking either of these are charged $1 per month for use of instruments.

Instrumental music is a fine art or "accomplishment," rather than a mechanical art. We do not place it among our "industrials" in the same sense, or for the same purpose, that we do those provided for teaching the trades. Accordingly, a fee of $12 per term, or seventy-five cents per week is required from female students for tuition and the use of pianos or organs.

The only charge made for material in either the literary or industrial departments is for the chemicals used by students in laboratory practice, which are furnished at wholesale prices, and amount to but a small sum.

Furnishing an absolutely free education is as much as can be reasonably asked; and the Institution neither boards, clothes, nor supplies the student with text-books. Boarding can be obtained in private families at from $2.75 to $4 per week. Washing costs from seventy-five cents to one dollar per dozen. Text-books, which can be procured in Manhattan, cost from $2 to $5 per term.

No student need expend over $5 per week; and many of our best pupils are living at $1.25 per week. Students desiring to "board themselves" can do so at from $1 to $2 per week. In a club of four young men, renting a house, the average cost to each for the term was $1.11 per week.

LABOR.

Manual labor by the students may be for either of two purposes: First, to acquire skill in a given art; second, to earn money. In the first case, the labor is educational; in the second, it should be paid for by the party benefited.

Educational Labor.—Manual labor in the reciations of the Industrial Departments, like mental labor in those of the Literary Departments, is purely educational and will not be remunerated. While the interest of the student will be held paramount in the direction of this labor, the practice necessary to dexterity will be required.

Remunerated Labor.—When the Institution needs labor on the Farm or elsewhere which is not educational, but simply for its own profit, and which a student is able and willing to perform, it becomes an employer instead of a teacher, and he an employe instead of a scholar. It pays for work, he works for pay. The relation between them is commercial, not educational; and both parties must act upon business principles. Hence, the College furnishes only such employment as its own interests require, and will pay according to the value of the service rendered at from seven to ten cents an hour.

AMOUNT EARNED.

It is impossible to predict how much a given person can earn, since that depends upon what he can do and what work there is to be done. Hence, it is wholly impossible for us to answer the question so often asked: "Do you think I can meet my expenses by work?" Some students make one-half their expenses, some the whole, and exceptional men have made more than expenses. As a rule, a faithful boy skilled in farm work can earn half his expenses on the Farm or in the Nursery. During the year he can ordinarily acquire sufficient skill in the wood or iron shops to enable him to make articles for sale. The whole question is one for his own consideration and decision. We can teach all who come, but cannot absolutely *promise* anything more. Hitherto we have refrained from holding out strong inducements respecting the amount of labor we might have to offer; but in view of the fact that during each of the last three years we have had more to do than the students could perform, we are inclined to give greater and positive encouragement on this point. Any boy who is in dead earnest, who is familiar with farm operations, and who can raise $50 to start with, should be able to carry himself through the four years' course. And certainly this places an education within the reach of every determined boy. As yet we are unable to offer similar advantages to girls, not requiring labor in the College departments which they can perform.

RULES.

1. Behave as a true man or woman should, at all times and in all places.

2. Attend to your own business promptly, thoroughly and courteously; and vigorously let alone that of other people.

3. Penalty: "Leave!"

PUBLICATIONS.

The "Hand-Book," published in 1874, containing a full discussion of the educational question and the aims of the Institution, will be forwarded to any one desiring it.

THE INDUSTRIALIST, a weekly journal edited by the Faculty and published by the Printing Department, contains original and seasonable articles on the Farm, Orchard, Trades, Sciences, and Education. Price, 75 cents a year. Address A. A. Stewart, Manhattan.

CALENDAR.

Winter Term 1879.—Begins Friday, January 3d, 1879.

TO NEW STUDENTS.

Bring the text-books you have been using. On arrival, first arrange for your boarding. A. A. Stewart, Sup't Printing Department, will furnish information, either by letter or on application, concerning boarding places or rooms for rent. Report to the President at 8:30 A. M., immediately after chapel, for enrollment.

For further information apply to Jno. A. Anderson, President, Manhattan, Kansas.

LITERARY SOCIETIES.

ALPHA BETA.—Chartered, December 26th, 1870. Meets in College building every Friday at 2 P. M. Ladies admitted. New students cordially invited to attend. W. H. SIKES, President.
MISS MARIA E. SICKLES, Secretary.

WEBSTER.—Chartered, January, 1871. Meets in Telegraph Hall every Saturday evening. Visitors, especially students, always welcome.
H. C. RUSHMORE, President.
J. N. MORROW, Secretary.

RAILROAD TIME-TABLE.

KANSAS PACIFIC RAILWAY.

PASSENGER ARRIVES.

No. 2, going East	11:14 A. M.
No. 4, going East	3:47 A. M.
No. 1, going West	5:10 P. M.
No. 3, going West	4:33 A. M.
No. 7 (freight), going West	8:15 A. M.

Nos. 1 and 2 run daily; Nos. 3 and 7 run daily except Monday; No. 4 runs daily except Sunday. Passengers with tickets are carried on No. 7.

GEO. C. WILDER, Agent.

KANSAS STATE AGRICULTURAL COLLEGE.

FACULTY.

J. A. ANDERSON, *President, Prof. Political Economy.*
M. L. WARD, *Prof. Mathematics and English.*
G. H. FAILYER, *Prof. Chemistry and Physics.*
E. M. SHELTON, *Prof. Prac. Agricul., Sup't Farm.*
H. E. VAN DEMAN, *Prof. Botany and Horticulture.*
J. E. PLATT, *Prof. Elem'y English, Mathematics.*
JNO. D. WALTERS, *Teacher Industrial Drawing.*
HON. D. J. BREWER, *Lecturer on Practical Law.*
T. T. HAWKES, *Sup't Mechanical Department.*
A. A. STEWART, *Sup't Printing Department.*
W. C. STEWART, *Sup't Telegraph Department.*
MRS. M. E. CRIPPS, *Sup't Sewing Department.*
W. L. HOFER, *Teacher of Instrumental Music.*

INDUSTRIAL EDUCATION.

The real value of an education to the student depends upon two things: First, the practical worth of the knowledge taught; and, second, the degree in which he makes it his own. Hence, the ability of any institution to give a practical education depends upon the kind and aim of the knowledge it teaches, and upon the thoroughness of the instruction therein. The State Agricultural College was directly endowed by Congress, and is guided by the State, for the specific purpose of furnishing to the industrial classes of Kansas a "practical" education, that is, "one fit for use." As its name indicates, and as the statistics of the industries of the State require, its chief work must be that of giving a useful and usable education to those who will engage in farming; and, therefore, the Farmer's Course must, from the nature of the case, be its main one.

FARMER'S EDUCATION.

Words and figures are merely instruments with which to record ideas. They are not themselves ideas, nor should they be made the chief end of an education. As a wagon is necessary to haul grain, so are they a necessary part of an education; but as the wagon is not the grain, so they are not the knowledge which the farmer converts into money. Hence, the classics and higher mathematics are not taught. But it will be noticed in the following course that so soon as the pupil acquires working skill in the use of the English language as a tool, and of figures and lines as mathematical tools, those arts and sciences which present knowledge that has a cash value to the farmer are taught as rapidly as their importance and thorough acquisition will permit. Studies numbered (1) and (4) in the second, third and fourth years are the spine of the course, to which the others are as ribs and muscle.

FARMER'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Practical Agriculture (advanced.)		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit. Economy, Practical Law.		3. Practical Geometry.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. Practical Agricul. (elementary).		4. English Structure.	
5. Agricul. Chemistry, Meteorology.		5. Organic, Analytical Chemistry.		5. Physics.		5. Adv'd Arithmetic, Book-keeping.	
6. Logic.		6. Practical Surveying.		6. Industrial Drawing.		6. U. S. History, Industrial Drawing.	

WOMAN'S EDUCATION.

Nearly one-half of our students are females, and the Woman's Course is prepared expressly for their liberal and practical education. We have no doubt whatever that practical men and women, who understand what it means and what it seeks to do, will fully endorse it.

WOMAN'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Farm Economy, Special Hygiene.		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit'l Economy, Practical Law.		3. Industrial Drawing.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. English Literature.		4. English Structure.	
5. Phys'c'l Geography, Meteorology.		5. Organic, Household Chemistry.		5. Physics.		5. Adv'd Arith., Book-keeping.	
6. Logic.		6. Household Economy.		6. Industrial Drawing.		6. U. S. History, Industrial Drawing.	

MECHANIC'S EDUCATION.

Because of the adaptedness of the leading course to the wants of the intelligent mechanic, it has been found practically unnecessary to diverge from the Farmer's Course. Additional studies, specially adapted to the mechanic's use, will be furnished in a Post-Graduate's Course.

If it be urged that the distinctively agricultural knowledge taught in the Farmer's Course is not directly valuable to the mechanic, we reply that, admitting the point for the purpose of argument, yet: 1. This knowledge is of more practical value to the mechanic than is the Latin, Greek, or a half dozen other things embraced in the usual course preparatory to the professions; 2. That the great majority of Kansas mechanics will also be more or less engaged in agriculture; 3. That those studies in the course which are directly valuable to the mechanic, together with the shop facilities, offer a better mechanic's education than can be elsewhere found west of the Alleghanies.

INDUSTRIAL DEPARTMENTS.

Having knowledge in the head is one thing; ability to use it with the tongue, fingers or feet is quite another thing. Both are vital to success in practical life. A man might thoroughly understand the theoretical principles of carpentry, and yet, not having used the tools, be wholly unable to earn carpenter's wages. So in all other vocations. Accordingly, instruction is given in the following well-equipped Industrial Departments, and every student is required to recite in some one of them, as selected by the pupil or parent:

FOR MALE STUDENTS.	FOR FEMALE STUDENTS.
The Farm.	Dress-making.
The Nursery.	Printing.
Carpentry.	Telegraphy.
Cabinet-making.	Scroll-sawing.
Turning.	Carving.
Wagon-making.	Engraving.
Painting.	Photography.
Blacksmithing.	Instrumental Music.

Each of these departments is conducted exactly as in daily life, and aims to give precisely the drill received by an apprentice. No charge is made, either for tuition or material, from male students taking the Industrials provided for them; nor from female students taking the ones provided for them, except in the Department of Instrumental Music. Male students taking either Printing or Telegraphy are charged $1 per month for the use of material and instruments.

DEPARTMENTS OF INSTRUCTION.

DEPARTMENT OF AGRICULTURE.

PRACTICAL AGRICULTURE.

Second Year:—General principles of breeding; history and characteristics of breeds; adaptation of different breeds for special purposes and localities; implements of simple tillage; mechanical principles involved in their construction; act on of the plow upon soil and subsoil; principles of draught; influence of different adjustments upon draught; use of the dynamometer; value of hoed crops in a system of husbandry; the cultivation of corn and roots; soils that need drainage; how to lay out a system of drains; house drainage; sewerage.

Fourth Year: General view of agriculture, ancient and modern; agricultural progress of the last century; relative advantages of mixed husbandry and special farming; the selection and arrangement of the farm with reference to the system to be pursued; rotation of crops; general advantages of a rotation; the best rotation with reference to disposition of labor, production of manure, and extermination of weeds; pasturage and production of grain and forage crops; manures, how best housed and applied; composting manures; commercial fertilizers; systems of feeding; stall feeding; steaming food; soiling; experiments in feeding; farm buildings; farmhouses; barns.

FARM ECONOMY.

Woman's Course, Fourth Year: Dairy products as human food; influences affecting character of milk; manufacture of condensed milk; the factory system and household plan of cheese-making; treatment of rennet; general process of cheese manufacture; subsequent treatment of cheese; butter-making; creameries; "deep" and "shallow" setting systems; general process of butter-making; packing and preserving butter.

DEPARTMENT OF BOTANY AND PRACTICAL HORTICULTURE.

This department embraces a course of instruction in the elements of botany, structural and systematic, with a constant attention to the practical application of botany to the farm, orchard, garden, nursery and forest; also a course of lectures on Landscape Gardening. The instruction is mainly given by lectures, accompanied by regular practical drill in all the work of the fruit, vegetable and flower gardens, nursery, orchard, vineyard and ornamental grounds.

The lectures in Practical Horticulture embrace the following and kindred subjects: The relation of atmospheric motion, moisture and temperature to horticulture; seeds, the means of collecting and preserving; propagation, by seeds, cuttings, layers, suckers, grafting, budding; care of young plants; improvement of varieties; management of commercial and farm nursery; modes of pruning; the orchard; fruit suitable for orchard and garden culture; the flower, vegetable and fruit garden; importance and mode of forest culture; shelter belts and their influence; weeds and useful plants; noting the species of trees worthy of culture, either for profit or ornament.

LANDSCAPE GARDENING.

The lectures on Landscape Gardening not only unfold the accepted principles of the art, but at the same time give special attention to such applications of the art as may be made universally available in laying out and improvement of farms and the homes of the people. These lectures are accompanied by a practical drill in in the work of laying out and plotting grounds topographically.

CHEMICAL DEPARTMENT.

PHYSICS.

This includes a full consideration of the laws of mechanics, of liquids, gases and vapors, weights and measures, and specific gravity, followed by experimental study in the Physical Laboratory of the laws of heat, light, with spectrum analysis, electricity and magnetism, and the relation of these forces to plant and animal life. Text-book, Ganot.

INORGANIC CHEMISTRY.

This course is opened with a careful study of chemical forces and the laws governing chemical combination. The elements, with their compounds, are next considered in succession as to their history, properties, manufacture, and especially with regard to their uses on the farm and in the arts. These lectures are accompanied by an extended course of laboratory practice in which each student performs every experiment with his own hands. Text-book, Eliot & Storer.

ORGANIC CHEMISTRY.

This comprises a thorough study of the chemistry of the organic compounds, the composition of plants and of the various compounds derived from them. Constantly accompanied by laboratory practice.

CHEMICAL ANALYSIS.

In this course each student is furnished his stand in the Qualitative Laboratory, completely furnished with apparatus and chemicals for his own use. He here performs analyses of farm soils, plant ash, commercial manures, ores, mineral waters, commercial compounds, etc. After completing this course, he enters, if he desires, the Quantitative Laboratory, where he pursues a full course in quantitative analysis. Text-book, Kedzie's Manual.

AGRICULTURAL CHEMISTRY.

This includes a thorough consideration of the application of chemical principles to the economy of the farm; the origin and formation of soils; the classification and composition of soils; the analysis of soils and their adaptation to purposes of production; the composition and use of manures; composting; chemistry of farm operations, such as plowing, fallowing, draining, etc. Text-book, Johnson's "How Crops Feed."

METEOROLOGY.

Embracing the composition of the atmosphere; atmospheric pressure; temperature and humidity; laws of storms; rain, snow and atmospheric electricity. A full course in meteorological observations is taken under direction of the Signal Service. Text-book, Loomis' Meteorology.

MINERALOGY.

This includes the study of the laws of crystallography, with the properties, forms and uses of the principal minerals of the United States. Blowpipe analysis forms a very important part of the course, each student being required to name and identify a large series of minerals. Text-book, Dana's Mineralogy.

HOUSEHOLD CHEMISTRY.

A course of lectures on this subject is yearly delivered to a class of young ladies. The course embraces the chemistry of cooking; the composition of food; bread; tea, chocolate and coffee; butter and milk; ripening and preservation of fruits, etc.

SPECIAL COURSES

Are constantly in progress in Assaying, Pharmaceutical Chemistry and Photography.

ENGLISH LANGUAGE.

Words are simply tools used to express ideas; and, since the vast majority of our communications are made by the employment of spoken or written words, skill in using them is as profitable to the industrialist as dexterity with the needle is profitable to the seamstress. The direct aim of the course is to make the student skillful and intelligent in handling the machinery called language, just as an engineer handles a locomotive; and no drill will be omitted, or effort spared, to gain this end. Apart from the course itself, which is far more practical and complete than that usually found in literary colleges, the constant attention given this subject by all the departments, and especially the practice required in the printing classes, affords superior advantages to the student.

DRILL IN ENGLISH.

"As grammar was made after language, so ought it to be taught after language."—*Herbert Spencer.*

Drill in English embraces the following topics:

Sounds of the language; drill in producing the vocal, sub-vocal and aspirate elements with accuracy, distinctness and volume; vowels, consonants.

Letters: Form; power; rules for spelling, drill.

Words: Signification, properties, modifications, variations, relation and dependence.

Sentences: Drill in statement of ideas; description, clearness, terseness, vigor; business letters, discussion; capitalization; syllabication; punctuation; construction and analysis of sentences; elements, uses and names; criticism of compositions printed as written; proof reading; grammatical construction; superfluous words and clauses; drill in reading, speaking and penmanship.

Text-books: Webster's Academic Dictionary; Lee & Hadley's Advanced Lessons in Language.

Pupils deficient in spelling, etc., should enter the printing class, the printing-office being the work-shop of language.

STRUCTURE OF ENGLISH.

ELEMENTS OF WORDS.—The end aimed at in this study is to learn everything about words which will aid in their effective use. Among the topics included are:

Roots: What are they; their origin; their force and value as an element of language; the manner of their growth into different parts of speech.

Stems: Their derivation; their offices and properties; their relation to other parts of words.

Prefixes and Suffixes: The several sources whence derived; the relation of their force or significance to those sources; explanation of the laws and principles governing their use along with stems.

Compounds: Their value; their properties and uses; the laws governing their formation.

Synonyms: Definitions; causes of their abundance in English; the principles to be observed in choosing among them, to express a thought.

Criticism: This constitutes a prominent part of the exercises of the pupil through his whole course in the study of English. It not only diversifies and enlivens the class-room exercise, but reduces to practice the principles of the structure of the language. By this means, the student acquires not only a knowledge of English, but readiness and accuracy in speaking or writing it. The exercises in criticism embrace not only examination of selected matter, but original composition.

ELEMENTS OF SENTENCES.—The purpose in view in studying this subject is not to traverse the ground gone over in the study of grammar, but to fix in the mind of the student a clear understanding and remembrance of names, the properties and offices of the several classes of words entering into an English sentence, by showing him the reason of things; to make more simple, as well as interesting and practically useful, a study otherwise "dry and unprofitable" in many cases, by explaining the reason of the verbal forms and changes, the rules and maxims he is to remember and observe in his use of language. In the same manner he is conducted through a study of the mutual relations and dependencies of the several elements making up a sentence.

MATHEMATICAL DEPARTMENT.

Figures and lines, like words, are only instruments with which to convey ideas, or perform operations that cannot be easily done without them. The arithmetical principles used in business are few and simple; but accuracy and rapidity in computation are only gained by practice. College graduates often fail to retain clerkships, not because they do not know *why* given operations are performed, but because they can neither add, multiply or divide with that habitual correctness which renders their work reliable.

DRILL IN ARITHMETIC.

The chief design of this study is to make the student expert in the use of numbers, as employed by the industrialist for profit. The occupation of a successful farmer demands the application of every principle of practical arithmetic, and is taken as a starting point, rather than that of an abstract system. Beginning with a simple cash account, book-keeping is gradually developed to the full extent of its real utility. The areas of fields, expense of crops, construction of houses, sales of produce, and investment of capital, involve all the fundamental operations, and those of profit and loss, commission, taxes, insurance, exchange and stocks. Following this line, the student, so far from hammering away at "pure" science draws from the mathematical store-house what he needs, and sees why he needs it. Accuracy of calculation and posting, rather than a *mere* comprehension of the principles, is aimed at. Besides the recitation-room drill in business forms, practice in the field is also given. Estimating the number of cords in a pile of wood said to be 100x4x4 feet is one thing; measuring a pile of wood through which any number of cats may be harmlessly thrown, and in which four-feet sticks are the exception, is quite another and more difficult thing.

ARITHMETIC AND BOOK-KEEPING

Is a continuation of the above, having the same purpose and adopting such methods as the necessities of the class indicate. Thorough instruction in the principles and forms of business law is given. It will be seen that this method of teaching book-keeping, besides ensuring arithmetical practice, develops practical skill in that important art.

ALGEBRA.

Algebra is included in the course as a preparation for the study of Surveying.

DRAWING.

The practical value of Industrial Drawing can hardly be overestimated, first, because its study is the best drill for the development of the perceptive faculties, which are the ones most employed in daily life; and, second, because the working classes make a far greater use of lines than they do of figures. A farmer follows a line when laying a straight furrow; the carpenter uses the square and rule twenty times as often as he does figures; and a woman in cutting a pattern, or deciding that one bonnet is prettier than another, does so by the line or "form." So that either in its direct application, or in the exercise of that taste which comes from skill in using lines, this branch of mathematics is quite as important as a means of "mental discipline" as is the branch of computation, and is of far greater daily use. The admiral system of Prof. Walter Smith, Art Director of Massachusetts, is thoroughly followed through the grades of Free-hand, Geometrical, Object, Model, Perspective, Mechanical and Topographical Drawing, during the terms indicated by the Course of Study. In addition, constant practice in the application of lines to metal and wood is furnished in the Blacksmith, Carpenter, Turning, Scroll-sawing, Carving, Engraving and Printing shops, and to fabrics in the Sewing Department.

PRACTICAL GEOMETRY.

Not one farmer in a thousand ever uses the transit in surveying his land, the testimony of the county surveyor being decisive in court; but every farmer makes countless applications of lines and angles in laying off fields, roads, gardens, planning houses, determining levels, etc. The object of Practical Geometry is to teach the properties and uses of angles, and to make the student skillful in the application of lines to the field by the use of such simple instruments as are always within reach, or within his ability to construct; and accurate in the transferring of plans to the grounds, board or block.

PRACTICAL SURVEYING.

The drill in the use of figures and lines given by the mathematical course as above indicated, renders the mastery of surveying an easy task. There is no calculation made or formula used by the working engineer which cannot be readily understood and performed by a skillful arithmetician after proper instruction. The hand-book of the engineer is accordingly supplemented with such special guidance as is found necessary for a full comprehension of the mathematical principles and their applications; and extended field practice is required in the use of the compass, level, transit and theodlite.

STUDIES SPECIAL TO WOMAN.

Besides the studies already indicated, attention is called to the following:

SPECIAL HYGIENE.

As shown in the course, one term is devoted to the study of Physiology, from the text-book of Dr. J. C. Dalton. This is followed in the fourth year by a course of lectures to young ladies by Mrs. Cripps on the subject of Hygiene, embracing such instruction in hygienic matters as are valuable to woman.

FARM ECONOMY considers those affairs of the farm which usually come under the supervision of the farmer's wife or daughter, and which are not included in "gardening" or "household economy;" such as butter and cheese-making, dairy management, etc. A course of lectures is delivered by the Professor of Practical Agriculture. See heading, "Farm Economy."

GARDENING is included in Practical Horticulture. See heading, "Landscape Gardening."

HOUSEHOLD CHEMISTRY. See heading, "Household Chemistry."

HOUSEHOLD ECONOMY

Follows Household Chemistry and consists of lectures by Mrs. Cripps in the art of house-keeping, embracing cookery, domestic management, and kindred topics. Many elderly gentlemen sufficiently know, and more young gentlemen will duly discover, that systematic knowledge of how cooking ought to be done is luminously different from the ability to do it. Instruction without practice can effect but little. Accordingly a kitchen laboratory has been completely furnished, and affords every facility for drill in the art of cooking. This drill chiefly differs from that of a kitchen in the respect that after a girl has learned to wash dishes or pare pototoes she is not kept everlastingly at either. After full trial we have found it just as feasible to give this practice, with profit and pleasure to the pupil, as it is to give laboratory practice in chemistry—and no more expensive.

THE INDUSTRIALIST

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FARMER'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Practical Agriculture (advanced.)	1. Botany, Entomology.	1. Botany, Entomology.	1. Physiology.	1. Physiology.	1. Drill in English.	1. Drill in English.	1. Drill in English.
2. Geology, Mineralogy.	2. Inorganic Chemistry.	2. Inorganic Chemistry.	2. Rhetoric.	2. Rhetoric.	2. Drill in Arithmetic.	2. Drill in Arithmetic.	2. Drill in Arithmetic.
3. Polit. Economy, Practical Law.	3. Practical Geometry.	3. Practical Geometry.	3. Algebra.	3. Algebra.	3. Industrial Drawing.	3. Industrial Drawing.	3. Industrial Drawing.
4. Zoology.	4. Practical Agricul. (elementary).	4. Horticul., Landscape Gardening.	4. English Literature.	4. Practical Agricul. (elementary).	4. English Structure.	4. English Structure.	4. English Structure.
5. Agricul. Chemistry, Meteorology.	5. Physics.	5. Organic, Analytical Chemistry.	5. Physics.	5. Physics.	5. Adv'd Arithmetic, Book-keeping.	5. Adv'd Arithmetic, Book-keeping.	5. Adv'd Arithmetic, Book-keeping.
6. Logic.	6. Industrial Drawing.	6. Practical Surveying.	6. Industrial Drawing.	6. Industrial Drawing.	6. U.S. History, Industrial Drawing.	6. U.S. History, Industrial Drawing.	6. U.S. History, Industrial Drawing.

WOMAN'S EDUCATION.

Nearly one-half of our students are females, and the Woman's Course is prepared expressly for their liberal and practical education. We have no doubt whatever that practical men and women, who understand what it means and what it seeks to do, will fully endorse it.

WOMAN'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Farm Economy, Special Hygiene.	1. Botany, Entomology.	1. Botany, Entomology.	1. Physiology.	1. Physiology.	1. Drill in English.	1. Drill in English.	1. Drill in English.
2. Geology, Mineralogy.	2. Inorganic Chemistry.	2. Inorganic Chemistry.	2. Rhetoric.	2. Rhetoric.	2. Drill in Arithmetic.	2. Drill in Arithmetic.	2. Drill in Arithmetic.
3. Polit'l Economy, Practical Law.	3. Industrial Drawing.	3. Industrial Drawing.	3. Algebra.	3. Algebra.	3. Industrial Drawing.	3. Industrial Drawing.	3. Industrial Drawing.
4. Zoology.	4. Horticul., Landscape Gardening.	4. Horticul., Landscape Gardening.	4. English Literature.	4. English Literature.	4. English Structure.	4. English Structure.	4. English Structure.
5. Phys'c'l Geography, Meteorology.	5. Organic, Household Chemistry.	5. Organic, Household Chemistry.	5. Physics.	5. Physics.	5. Adv'd Arith., Book-keeping.	5. Adv'd Arithmetic, Book-keeping.	5. Adv'd Arithmetic, Book-keeping.
6. Logic.	6. Household Economy.	6. Household Economy.	6. Industrial Drawing.	6. Industrial Drawing.	6. U.S. History, Industrial Drawing.	6. U.S. History, Industrial Drawing.	6. U.S. History, Industrial Drawing.

MECHANIC'S EDUCATION.

Because of the adaptedness of the leading course to the wants of the intelligent mechanic, it has been found practically unnecessary to diverge from the Farmer's Course. Additional studies, specially adapted to the mechanic's use, will be furnished in a Post-Graduate's Course.

"M. Quad" on Modern School Teaching.

Mr. Old Fogy came over to have a talk with me the other evening. He is a school teacher, and he seemed to be laboring under the impression that I meant to oust him from his situation, simply because I favor the departure from the present school system.

"Why, sir,—why, sir," he began, as he took a chair, "if children don't go to school to study, what do they go there for?"

"To learn," I replied.

"Ah! yes, to learn; but how would they learn if they did not study?"

"Do you know when the United States Mint was first established?" I asked.

"Well—well—ahem—I really don't," he replied.

"Well, I will tell you. It was in 1792. Now, how long will you remember it!"

"Just as long as I remember anything."

"Certainly you will, and you have learned it without study or reference to a school book. What's to prevent children from learning in the same way?"

"But—but—it isn't regular," he stammered.

"No, of course not. Your father cut wheat with a cradle, and it wouldn't be regular for you to cut it with a reaper."

"But if children didn't have study hours and regular classes, there would be no order in schools," he protested.

"Instead of study hours, I would call them hours of reference,—hours in which they were searching answers to questions. The classes would be the same. I would ask questions which I knew they could answer from text-books, and their search for them would be a pleasure instead of a study."

"I—I don't understand."

"Don't you? Suppose I ask you what city in England is devoted to the manufacture of cutlery."

"I'd answer Sheffield, of course."

"And so would a school-boy, after hunting it up. And further, he would also find that coal and iron is mined near by and you would have a fine chance to tell the whole school that American cutlery is now being sold all over Europe and right at the doors of Sheffield. In telling them that ask them what the knife-blades are made of, how prepared, and what substance is used for handles. Let them go home and ask their parents,—let them go to machine shops, or anywhere else where information is to be had."

"Very irregular—very irregular," he sighed.

"Yes, and if your aunt died before your uncle it would have been the same thing. The text-books say that an island is a body of land surrounded by water. Just so. That's a cold fact known to all pupils. But suppose I say: 'Children, in telling me to-morrow what an island is, tell me also on what island a great soldier was kept prisoner until his death, and any further facts you can.' Don't you admit, Mr. Old Fogy, that in answering that request they'd give me the name of Napoleon; the island; the ocean around it; the nationality of the captors; the last battle fought by the prisoner; and perhaps other information?"

"But what's the use of text-books?" he growled.

"They are good for reference—nothing more. Let the teacher ask the question, and the text-books furnish the answer. Before you went to school at all you knew the alphabet, didn't you?"

"Of course."

"Did you learn it by study, or from your mother?"

"From my mother."

"Yes, and from mother and father and others you learned the names of various animals, articles of furniture, buildings, tools, and so forth. How does a boy four years old know a horse from a cow?"

"He has been told."

"So he has. There is no book to tell him. And yet, when that boy is fourteen, with his mind enlarged and his faculties brightened, you contend that he will not remember what he is told! If by telling and talking, parents teach children so much, what could teachers not teach them in after years, when the soil is ripe for seed? Now, then, your pupils all know what the capitol of this State cost?"

"Well—well—perhaps."

"Can you tell, yourself?"

He chewed away at the question and gave it up.

"Well, my way would have been to take a newspaper into the school and read aloud to all my scholars all about the new building. Then I would have said: 'Now, children, in telling me when the capitol was removed to Lansing, tell me also how many members there are in the Legislature, how often it meets, who presides over each body, how long the sessions usually last, and what pay the members receive.' Some of the answers can be had in their text-books, others from parents, but what harm if they halted pedestrians on the street, or wrote letters of inquiry to the Secretary of State? The more trouble to get the facts the longer they would remember them, and the more incidental information would be picked up. The whole school would profit by the answer, whereas but one pupil would be benefited by the answer to a question put directly to him."

"Well, I dunno," he sighed, as he hitched around on his chair.

"Perhaps you don't. Perhaps you don't know that if my boy came home and said that the teacher had told him to find out who William Penn was that I wouldn't take pride in posting him on every incident in Penn's life, and that all other parents would do the same, thereby dividing the burden with the teacher. Perhaps you don't know that a ten-year-old girl at one of our schools last year asked her teacher what State had abolished capital punishment, and that dozens of lawyers, all the daily papers, the Governor and two ex-Governors were mixed up in the discussion for days and weeks?"

"But it's very irregular—very," he replied, as he went out.—*Detroit Free Press.*

Boys on the Farm.

It is a proud day when the average boy gets on his first pair of boots and trudges to school by the side of his older sister. He does not care any longer to take her hand. The leading strings are cut. But this early ambition to be a man is entirely eclipsed, when he has taken charge of his first pair of steers and started for the fair. Has he not raised them from their mother's milk up, broken them to the yoke and to the cart, taught them to pull and to back, to haw and to gee, and to obey his word of command? They are his workmanship, the evidence of his skill in subduing brute muscle and making it do his bidding. He is going up to the exhibition to display the fruits of his triumph, and, as he hopes, to wear the laurels of victory. He is no longer merely a spectator upon the fair grounds, but an exhibitor of stock and an entertainer of spectators.

There is unquestionably a difference of native tastes in boys. Some have a natural aptitude to one calling and some to another, but most men have their callings detrmined by early circumstances; sometimes by incidents so trivial that they have hardly a place in memory. It is not difficult, generally, for a father who loves the farm to determine the calling of his children. If he makes it a business of thrift, and provide comfortably for his family, they will respect the calling. If he is discouraged and continually shifting his work, or his home, they will not be likely to make tillers of the soil. But if he conducts the farm upon business principles—makes it a machine for coining money—and providing home comforts, they will be ready to invest in it.

One can hardly begin too early with his boys to incline them to the calling that is to give them bread and the means of their future usefulness. If the boy is to be a farmer, he must begin to have a personal interest and venture in farming while he is yet a boy. Filial affection, in a happy home, is a very strong motive to industry and fidelity, but it does not shape a boy's plans for life like an investment of his own brains and muscles in his daily work. He should have crops and animals, not only that he can "call" his own, but that *are* his own, to keep, to enjoy, and to sell for his own pleasure and profit. The trusts may be small at first, but they should be absolute, and let him have his own experience of success and failure in managing them. Let him manage poultry, a lamb, a calf, or a colt, and exhibit his own stock at the fairs. We notice with great satisfaction the increasing attention paid to boys at the fall fairs. Boys did some of the best work at a recent plowing match at one of our fairs. One, a boy of fourteen, held the plow and drove his own team, and made as good a seed-bed as his older competitors. These premiums for boys' work are in the right direction, and should be carefully studied in making up the lists for next year. Make room for the boys.—*Southern Workman, Hampton, Va.*

Happy Kansas.

The people of Kansas have their lines cast in pleasant places. Blessed with a genial climate and pleasant soil, they are still more blessed with an intelligent and freedom-loving people. They see the world through modern mediums; and buttressed by school-houses, universities, social elevation and rich young blood from the ranks of the better classes of people in all the States, they are, while one of the youngest, one of the most advanced of all the commonwealths that make up the Republic. Happy Kansas, our people admire but envy you; and rich as are the material stores you pour into our commercial lap, a portion of the moral, political and progressive greatness that is yours would do Missouri more good than all the material wealth within your borders. It is these high qualities that make Kansas great.—*Kansas City Journal.*

AGRICULTURE cannot be carried on by any rigid rule. The soils of no two fields are precisely alike, or would be alike benefitted by the same treatment. No two seasons are precisely alike. All is variety, change. Intelligent farming is learning to adapt methods to conditions and circumstances. There are fixed principles that apply to each condition. The man who masters principles can become a master in practice. Modify all principles according to location and surroundings.

How skillful Job must have been to successfully navigate the world covered with boils, never strikes a fellow forcibly these days, until he is made superintendent of one on the back of his own neck.

How's your Savings Bank? It's on the "ragged edge," and the cashier is talking about the beauty of Switzerland.

ONE of the nine zinc works in America is located at Weir City, Cherokee county.

THE INDUSTRIALIST. Do you take it?

THE INDUSTRIALIST.

SATURDAY, JANUARY 25, 1879.

JNO. A. ANDERSON, Managing Editor.

ASSOCIATE EDITORS, MEMBERS OF THE FACULTY.

THE communication headed "Peculiarities of Our College," is from one who has been through the mill, and forms his judgment from actual experience; and also from one who is an entirely disinterested party, as far as this or any other college is concerned. His testimony is therefore worthy of careful consideration. The article will be continued next week.

Lockyer's Discovery.

Our people are yearly becoming more interested in science and scientific discoveries. This, of course, is much to be desired. But, in consequence of this relish for *popular science*, publishers of newspapers give to their readers anything which promises to create a sensation. Often the reporter draws upon his imagination for his scientific facts. Such is undoubtedly the case with many of the statements which are just now going the rounds of the press regarding Prof. Lockyer's investigations. We are told that Prof. Lockyer can transmute several substances which hitherto have been considered simple into others which have also been considered simple elements; that hydrogen, being the lightest substance, is probably the base of all the so-called elements; that present theories of chemistry must be entirely remodeled; that the alchemist's dream is about to be realized; and various other extravagant statements.

We can not give even a synopsis of his paper at this time. His investigations are made by means of the spectroscope. In brief, he has confirmed the observation of former investigators, that some of the elements give different spectra at different temperatures. He also finds that a compound may give a definite spectrum of its own. If heated to dissociation, the elements then give their own peculiar spectra, certain lines of which will be more brilliant than others. If now the temperature be raised to a certain point, the bright lines will wane and the paler ones become quite prominent. Ultimately, the lines which were originally most prominent disappear, and new ones are developed. The change from the spectrum of the compound to that of the element is the same in kind but even less in degree than the subsequent change. These and other facts, learned by spectroscopic observations, lead the Professor to conclude that the so-called elements are in reality compound bodies.

In this age of telephones, phonographs, phoneidoscopes and electric pens; when Crookes is demonstrating the "Fourth State of Matter," and Edison's prolific brain is astonishing the world,—it will not do to pronounce anything impossible. Perhaps prudence would dictate entire silence until the matter is settled. But, nevertheless, it seems that we are safe in saying that at least the probabilities are against the realization of the alchemist's dream.

It has long been known that the diamond is but carbon, which abounds in our coal fields, in plumbago, and in combination in most objects surrounding us. But still the knowledge of identity of subtance has not enabled us to transmute these grosser forms of carbon into the crystalline state,—diamond. There are various other examples of allotropism; some of which can be converted from one state into the other by the chemist, while others have thus far resisted his efforts.

Whatever changes Prof. Lockyer's investigations produce in theoretical chemistry, its practical applications probably will not be affected to any extent. If it is a fact that all matter is essentially the same thing, it was equally a fact before its discovery; and the common forms of matter have been evolved by the processes of nature through long ages, and it may be difficult to undo this work. The doctrine of evolution, which is accepted by most scientists, teaches that different species have been evolved from the same original source, but this does not enable one to transmute one species into another. We trust, however, that Prof. Lockyer and others will continue these investigations, let the result be what it may. He should not be made to feel, as have so many before him, that it is a heinous offense to attempt to revolutionize present scientific theories.—*G. H. Failyer.*

Peculiarities of Our College.

MESSRS. EDITORS:—I am a father and a resident of the State of Missouri. Two years ago I examined with some care the course of study in the Kansas State Agricultural College. My sole object in making that examination, was to decide the question whether I should educate my children at your College or elsewhere. As the result, I decided to place a son and daughter at your institution. So far, I am more than satisfied with their progress. With your permission I would like to give my views, briefly, on what I take to be the peculiarities of your College. They are the views of one who may properly be called a disinterested witness, who more than thirty years ago enjoyed the advantages of a thorough course in one of the best colleges of New England, and has since been intimately acquainted with a very large number of college graduates. They are the views of one who, being himself a member of the so-called learned professions, is familiar with the educational experience of a great many professionalists, while he has had no small business experience also. Three peculiarities of your course especially attracted my attention.

1st. *Its omission of the classics.*

I have heard not a little fault found with your institution because it does not teach the dead languages of Greece and Rome. I spent years in the faithful study of these and other languages of the past, and became fairly proficient in them. I propose, therefore, to glance at the wisdom of this omission of the classics from the standpoint of my own experience and observation. Those who at all understandingly object to the dropping of these studies always insist on their great value in quickening thought, in cultivating accuracy and elegance of style, with copiousness of diction, and in throwing light on the meaning of the many English words derived from Greek and Roman sources. I am willing to admit all these claims, but only where there has been a fair mastery of the classics. I am sure these benefits are very slightly realized by the great mass of college graduates, if at all, owing to the very limited knowledge of Greek and Latin ordinarily obtained by collegians.

The time now spent in even our best preparatory schools and colleges in learning the dead languages, is utterly insufficient for any, except a very few peculiarly gifted students, to master them. The mass of graduates are at best smatterers in the tongues of Demosthenes and Cicero, and soon forget most of the little they once knew. Regular college courses are too extended and life too short to master them; and the classics, as the most unintelligible and unpractical, are therefore generally run over, slurred over, or *ponied* over, by the mass of students. Their hot-pressed acquisitions disappear, almost with the removal of the smoothing-iron. I do not believe that one in ten collegians graduates as good a Greek or Latin scholar as he was at the close of the sophomore year, or that one in a hundred knows as much of the classics five years after graduating as he did when he entered college. One of my great objections to a classical course is, therefore, that they generally form such a habit of superficial study as is fatal to thorough training. This skimming over habit acquired in cramming the languages of antiquity, once formed, is hard to break up and destructive to a sound education.

Another unfortunate result of common classical study is, that it trains the student to modes of thought and speech alien to the world in which he must live and labor. Its whole tendency is to Rip VanWinkleize him. If he has diligently learned the classics, he has lived with the dead past so long that he is ill prepared for the sharp conflicts and intense activity of the present age. He shoots with a bow and arrow instead of a Sharp's rifle; he carries a javelin instead of a Colt's revolver; he propels by banks of oars instead of steam engines; and talks by beacon-fires instead of telephones. He is therefore put at immense disadvantage in the strife of life, and generally beaten.

The third and last objection I shall urge here against the classics is their immoral, corrupting tendency. Most men can no more wade through the moral filth of ancient mythology without moral defilement, than they can flounder through a very soft and dirty barn-yard without becoming besmeared with disgusting ordure.

Now, if the classics are open to so many and fatal objections in the training of professionalists, where they have some apparent value, how extremely unwise to attempt to force them on the industrial classes, with whom they have not even a remote connection.

C.

[*To be continued next week.*]

WHY not concentrate more energy and means on a fewer number of acres, feed more stock, manure the land, in fact, proceed on the principle that if we feed the land it will in turn feed us?

A THOROUGH training in the arts of the dairy, of both girls and boys, in the rural schools has become the subject of earnest consideration on the part of some of the French agricultural societies.

A SPECIAL report of the Department of Agriculture, showing the condition of the crops, places the aggregate wheat yield for 1878 at 425,000,000. The corn crop aggregated 30,000,000 more than that of 1877. The oat crop of 1878 was the largest ever raised in the country. One-sixth more of rye was harvested than in 1877, but the potato crop of that year aggregated 45,000,000 more bushels than that of 1878. The barley crop was almost the same during the two years. Grapes, apples, pears and fruits generally show a decreased yield as compared with the crop of 1877.—*Atchison Champion.*

The Times Still Ahead.

A statement showing the amount of postage paid by the different daily newspapers of Kansas.

[From THE TIMES, Nov. 28, 1878.]

It is the plain duty of THE TIMES to give the public, and particularly our advertising patrons, the facts concerning its circulation, in order that they may fully appreciate its value and importance as an advertising medium.

The surest way to obtain the exact circulation of the papers of the State outside of the counties in which they are published, is from the amount of postage paid by them to the Post-office Department.

Below we give the amount paid by THE TIMES, taken from the post-office receipts of this date.

The amount paid by other papers in the State is taken from the Atchison *Champion*, which claims to have the amount from official sources, and being published in its columns is evidence that it accepts it as correct so far as it is concerned.

THE TIMES, Leavenworth, Kansas	$882.96
Champion, Atchison, Kansas	336.36
Commonwealth, Topeka, Kansas	302.12
Patriot, Atchison, Kansas	112.26
Blade, Topeka, Kansas	107.36
Public Press, Leavenworth, Kansas	102.00
Monitor, Fort Scott, Kansas	73.40

From the above it will be seen that THE TIMES pays more than double the postage of any other daily paper in the State.

THE TIMES pays more postage than any other two daily papers in the State.

THE TIMES pays more postage than any other three daily papers in the State.

THE TIMES pays more postage than any other four daily papers in the State.

THE TIMES, after deducting the amount paid for postage by all the other daily papers in the State upon their exchange list, *pays more postage on its bona fide circulation than all the other daily papers in Kansas.*

THE TIMES has a circulation in the county of Leavenworth on which no postage is paid twenty times greater than any other paper in Kansas.

THE TIMES is this day enlarged four colums, and in addition to being the cheapest and best paper in Kansas, is the largest. Its State News department is alone worth the price of subscription, and is a special feature of the paper, which commends itself to those who desire to keep posted in regard to items of interest in Kansas.

THE TIMES is pre-eminently a newspaper, and with its new and increased facilities and additional editorial force, will command a place in every household in Kansas.

DAILY TIMES, per annum	$8.00
WEEKLY TIMES, per annum	1.25

Advertising rates reasonable.

Address D. R. ANTHONY,
Leavenworth, Kansas.

THE INDUSTRIALIST.

SATURDAY, JANUARY 25, 1879.

Dr. Flack, of Enterprise, Dickinson county, paid his respects to the College this week. He is one of the live men in those parts.

We call attention to an article on the fourth page about "The Leading American Newspaper." Those interested in the subject treated will be amply paid for reading the article.

Fifty-three students graded ninety-five or over during the last month of last term. The following persons made an average grade of ninety-nine or over: Darwin S. Leach, Thomas R. Moore, Noble A. Richardson, and C. R. Welch.

The Emporia *Hatchet* has been merged into *The Educationist*. Messrs. Wharton, Stubbs and Davis will continue to be its editors. The paper will be the size of the INDUSTRIALIST, and will be issued monthly at fifty cents a year. Teachers, school officers, and others interested in education, should patronize this valuable little monthly.

Mrs. Platt and Mrs. Coe were taken by surprise one day this week, when presented with the pictures, taken in group, of the young men who acted as pall-bearers at the funerals of George Platt and Henry Coe. These mothers will greatly prize these pictures, and will long remember the boys who escorted their sons to the final resting-place.

The Manhattan Guards are now drilling twice a week. Capt. W. C. Stewart is awakening a new interest among the "boys" by his energy and enthusiasm. The Guards expect to procure uniforms in a short time. Manhattan will wake up some fine day to the fact that she has the best-looking, best-uniformed, and best-drilled company of militia in the State.

The Manhattan Institute has engaged Miss Phœbe W. Couzins, the noted lady lawyer of St. Louis, to lecture here next Thursday night. Miss Couzins has been lecturing in Atchison this week, and the dailies there speak very highly of her. She drew good houses every night, and is said to have given better satisfaction than any lecturer who has ever visited the city. She will speak in the Presbyterian Church, on Thursday evening next. Subject, "Some Mistakes about Eve." Admission, twenty-five cents.

The last number of the *Kansas Monthly*, published at Lawrence, contains, besides many other excellent things, a beautiful, colored map of Riley county, and engravings of the College buildings, Elliott's land office, and Purcell's Block. This magazine is becoming quite popular, containing as it does such a fund of information in regard to the resources, growth and prosperity of Kansas. The January number of the *Monthly* will contain illustrations of the different State buildings and a complete official State directory. A complete map of the State, colored by counties, will be given away with this number. Address L. R. Elliott, Manhattan, Kansas, for a copy.

Prof. VanDeman has lately recieved, for the Horticultural Department, from Mr. John Morrison, of Stanton, Mo., through Rev. H. I. Coe, dried specimens of twenty species of ferns. Several of them are very rare even in Missouri, and two of them are from Scotland. This is a valuable addition to the College herbarium. Mr. Moyer, of Sherman, Texas, has also just sent to the Horticultural Department a specimen of wood of the osage orange tree, and several specimens of the mistletoe, with the beautiful, white, wax-like berries attached. These things are all of interest and benefit to the students, and will become a part of the educational apparatus. These friends can have the satisfaction of knowing that they are not only sincerely thanked, but that they have added to the progress of a good cause.

During December, the last month of last term, the following students attained an average grade of ninety-five or over in all their studies:

Emma Adams, Chester Allen, Charles Bates, Arthur Blain, Emma Campbell, Ettie Campbell, Chas. Chenoweth, Ella Coburn, Henry Coe, Jennie Coe, A. F. Dickson, George H. Dow, Wilmer Eckman, Dora Edmiston, Henry Farnsworth, Geo. Gordon, Linda Hatch, William G. Hicks, C. M. Hulett, Henry L. Hunt, James Jacobs, Walter W. Jaquith, Dora Kinsey, Emma Knostman, Darwin Leach, James H. Lynch, John Mann, S. E. McNair, Thomas R. Moore, John N. Morrow, Amy Noyes, Ida Noyes, Henry A. Platt, C. J. Reed, Noble Richardson, W. E. Rollings, George E. Rose, Wm. N. Rose, H. C. Rushmore, Lewis A. Salter, Cassius M. Shartell, Maria E. Sickles, Geo. L. Sigman, Wm. H. Sikes, John A. Sloan, Chas. H. Stiles, George Throckmorton, C. R. Welch, Clarence Wood, J. W. Woodworth, T. J. Wyland, E. V. Cripps, and James Merrill.

We last week paid a flying visit to the home of that noble herd of Short-Horns, Durham Park, Marion county, Kas.; and it gives us great pleasure to commend it to all interested in this race of cattle. The Durham Park herd enjoys a world-wide fame; and like Kansas prairies, and Kansas wheat and corn fields, it is a "big thing" in the biggest sense of this phrase. This herd now numbers two hundred head, and it counts among its peculiar glories animals having pure Duke and Booth pedigrees, for which prices bordering on the fabulous have been paid.

Parties wishing anything in the line of Short-Horns, will find it greatly to their advantage to pay Durham Park a visit; and for Major Crane and Mr. Hallowell, the superintendent, we can say that what these gentlemen assert about their stock and pedigrees may be received with entire confidence. The Durham Park people have acquired a reputation for upright dealing, and this is quite as generally known as their herd of cattle. S.

The "lofty amphitheatre" of the Alpha Beta Society was filled to overflowing on January 24th, and the exercises were unusually interesting. Exercises opened with prayer and music. Seven persons were initiated, and then we proceeded to debate on the propriety of opening the Indian Territory to settlement, which was decided in the negative.

The *Gleaner*, presented by A. T. Blain and Miss E. Glossop, was one of our best. It was draped in mourning, in memory of our late member, Henry F. Coe, who has done so much for its columns in the past. There were two articles in memory of the deceased, one in prose and one in poetry. Music was now followed by extemporaneous speaking, which was animated, and all seemed interested in what was said during this exercise.

Question for debate next week, "*Resolved*, That it would be better for a nation to adopt a system of industrial than a system of professional colleges." Affirmative, G. P. Howard and F. M. Jeffery; Negative, E. P. Coleman and W. J. Jeffery. *Gleaner*, in two weeks, by Geo. Rose and Mattie Mails. HOMBRE, *pro tem.*

In the opinion of your reporter, the hall of the Websters was sadly deserted last Saturday night. Cause why? For the reason, as before mentioned in our reports, that at that time Noble Prentis, of Topeka, was to deliver, in the Presbyterian Church, his lecture on "Funny Americans;" and of course all Websters desired to be there. We went expecting a rare treat, and were not disappointed. His subject was well chosen and skillfully handled. In his opening remarks, he asked the question, "What kind of an apple did William Tell shoot from off the head of his boy? Was it a Roxbury Russett or a Tallman Sweeting? He reviewed the most prominent of the funny men of America, showing their nativity and characteristics; and interspersed his lecture with quotations from their funniest productions. He held the opinion that Artemus Ward, Mark Twain, Lewis, of the Detroit *Free Press*, and Burdette, of the Burlington *Hawk-Eye*, were the funniest of all funny Americans.

If there were any ladies present who aspired to the fame of being humorists, they must have been sadly discouraged when they heard that only one woman (the author of the Widow Bedott Papers) had attained notoriety in that line, and that she died shortly after she began to look upon the funny side of "natur' and all creation."

In the course of his lecture, he showed that Lewis, of the *Press*, began his career as a humorist after an explosion on a Mississippi steamboat, in which he was an "interested spectator." Lewis wrote an amusing sketch of the disaster, and his career as a humorist was from that time rapid and certain, so that he is now considered one of the leading funny men of America. The lecturer inferred from this that a man, to succeed in business—especially as a humorist, should have a "lift" in early life.

The lecture was fine, well delivered, and was fully appreciated by the audience. Your reporter went home fully convinced that Noble L. Prentis is just as God made him, "if not more so."

LEACH.

NATIONALIST ITEMS.

G. W. Shofe expects to put in the foundations for his new house on College Hill this spring.

Two cars of stock were shipped on last Friday, five cars Sabbath afternoon, and three cars on Monday.

Several students skated from town to the College last week. The sleet made a very good skating rink in almost any and every place.

Hon. H. P. Dow has rented his farm, and his family is now living in the dwelling on Poyntz avenue recently occupied by John Drew.

A few days ago an Eastern gentleman, who has traveled all over Kansas, told us that he had seen more really good stock in this vicinity than anywhere else in the State.

The railroad company commenced this week to put in an iron bridge over the Blue, in place of the wooden one that has been there since the road was built. The driving piles seems to be the work of this week.

Mr. C. B. Donaldson and wife returned from a month's visit at Holly, Mich., Saturday. This is the first vacation of the kind Mr. Donaldson has had in eighteen years. He has leased the Adams House for a number of years, and will refit it preparatory to making it his home and one of the best hotels in the State.

A lady writing from Brunswick, Georgia, tells of an earthquake which visited that place on the night of the 12th inst., and says "it was felt all over the town." Manhattan cannot boast of so big a thing as that, but since the sleet we have had quite a number of little ones which were felt very sensibly by those who started them.

We presume there is not a town in Kansas, with our population, that has not had more failures among its business men than Manhattan. Kansas has had fewer mercantile failures, in proportion to population, than any other State in the Union, and Manhattan occupies a very enviable position among Kansas cities. The reason is that our business men are usually honest, cautious and capable. No Manhattan bank has ever failed.

DIRECTIONS TO APPLICANTS.

TERMS OF ADMISSION.

Candidates for admission must be fourteen years of age, and pass a satisfactory examination in reading; arithmetic, through decimal fractions; and English grammar, to syntax. Classes are started at the beginning of each year in Drill in Arithmetic and Drill in English; and the pupil must have the knowledge above indicated, else he will be unable to retain position if admitted.

Pupils will be received at any time during the year, if able to pass an additional examination upon the subjects studied by the classes which they expect to enter. But they will find it greatly to their advantage to be present at the opening of each term, or as soon thereafter as posssble.

GRADES.

Both the Literary and Industrial recitations are graded daily upon a scale of 100; and an examination of all classes is made at the close of each month. A student not attaining an average grade of sixty is promptly dropped to a lower class, or excluded from the Institution until able to do so. The work of grading is strict and uniform in all the departments, and this process is rigorously used for sifting out incompetent and indolent pupils; thus more than accomplishing all that is designed to be effected by a "high standard of admission." Hence, the student's continuance in the College wholly depends upon his own action.

The course is based upon the determination to make the labor required in the preparation of one industrial and three literary recitations as much as the average student can perfectly perform, in ten hours a day. We design to give the pupil the worth of the time expended at College; and, in order thereto, he must do a full day's work with brain or hand. Only those students who can maintain a standing of ninety in each study will be allowed to take more than the prescribed number of recitations; and no one will be permitted to have less than one industrial and three literary recitations.

RELIGIOUS.

Unless otherwise directed by parents, students are required to attend chapel at 8:30 A. M. on academic days, and divine service once every Sabbath.

EXPENSES.

There are no charges whatever for enrollment, attendance or instruction in the regular courses; nor are there any "contingent fees" for the repair of buildings, for the use of books or apparatus, for diplomas, or the kindred privileges usually grouped under the term "contingent." Male students are furnished instruction, the use of apparatus, instruments or tools, in both the literary and industrial classes marked out for them, without any charge. And the same is true of female students in the regular classes provided for them. Printing and Telegraphy are industrials primarily provided for the education of female students, and male students taking either of these are charged $1 per month for use of instruments.

Instrumental music is a fine art or "accomplishment," rather than a mechanical art. We do not place it among our "industrials" in the same sense, or for the same purpose, that we do those provided for teaching the trades. Accordingly, a fee of $12 per term, or seventy-five cents per week is required from female students for tuition and the use of pianos or organs.

The only charge made for material in either the literary or industrial departments is for the chemicals used by students in laboratory practice, which are furnished at wholesale prices, and amount to but a small sum.

Furnishing an absolutely free education is as much as can be reasonably asked; and the Institution neither boards, clothes, nor supplies the student with text-books. Boarding can be obtained in private families at from $2.75 to $4 per week. Washing costs from seventy-five cents to one dollar per dozen. Text-books, which can be procured in Manhattan, cost from $2 to $5 per term.

No student need expend over $5 per week; and many of our best pupils are living at $1.25 per week. Students desiring to "board themselves" can do so at from $1 to $2 per week. In a club of four young men, renting a house, the average cost to each for the term was $1.11 per week.

LABOR.

Manual labor by the students may be for either of two purposes: First, to acquire skill in a given art; second, to earn money. In the first case, the labor is educational; in the second, it should be paid for by the party benefited.

Educational Labor.—Manual labor in the reciations of the Industrial Departments, like mental labor in those of the Literary Departments, is purely educational and will not be remunerated. While the interest of the student will be held paramount in the direction of this labor, the practice necessary to dexterity will be required.

Remunerated Labor.—When the Institution needs labor on the Farm or elsewhere which is not educational, but simply for its own profit, and which a student is able and willing to perform, it becomes an employer instead of a teacher, and he an employe instead of a scholar. It pays for work, he works for pay. The relation between them is commercial, not educational; and both parties must act upon business principles. Hence, the College furnishes only such employment as its own interests require, and will pay according to the value of the service rendered at from seven to ten cents an hour.

AMOUNT EARNED.

It is impossible to predict how much a given person can earn, since that depends upon what he can do and what work there is to be done. Hence, it is wholly impossible for us to answer the question so often asked: "Do you think I can meet my expenses by work?" Some students make one-half their expenses, some the whole, and exceptional men have made more than expenses. As a rule, a faithful boy skilled in farm work can earn half his expenses on the Farm or in the Nursery. During the year he can ordinarily acquire sufficient skill in the wood or iron shops to enable him to make articles for sale. The whole question is one for his own consideration and decision. We can teach all who come, but cannot absolutely *promise* anything more. Hitherto we have refrained from holding out strong inducements respecting the amount of labor we might have to offer; but in view of the fact that during each of the last three years we have had more to do than the students could perform, we are inclined to give greater and positive encouragement on this point. Any boy who is in dead earnest, who is familiar with farm operations, and who can raise $50 to start with, should be able to carry himself through the four years' course. And certainly this places an education within the reach of every determined boy. As yet we are unable to offer similar advantages to girls, not requiring labor in the College departments which they can perform.

RULES.

1. Behave as a true man or woman should, at all times and in all places.

2. Attend to your own business promptly, thoroughly and courteously; and vigorously let alone that of other people.

3. Penalty: "Leave!"

PUBLICATIONS.

The "Hand-Book," published in 1874, containing a full discussion of the educational question and the aims of the Institution, will be forwarded to any one desiring it.

THE INDUSTRIALIST, a weekly journal edited by the Faculty and published by the Printing Department, contains original and seasonable articles on the Farm, Orchard, Trades, Sciences, and Education. Price, 75 cents a year. Address A. A. Stewart, Manhattan.

CALENDAR.

Winter Term 1879.—Begins Friday, January 3d, 1879.

TO NEW STUDENTS.

Bring the text-books you have been using. On arrival, first arrange for your boarding. A. A. Stewart, Sup't Printing Department, will furnish information, either by letter or on application, concerning boarding places or rooms for rent. Report to the President at 8:30 A. M., immediately after chapel, for enrollment.

For further information apply to Jno. A. Anderson, President, Manhattan, Kansas.

LITERARY SOCIETIES.

ALPHA BETA.—Chartered, December 26th, 1870. Meets in College building every Friday at 2 P. M. Ladies admitted. New students cordially invited to attend. W. H. SIKES, President.
MISS MARIA E. SICKLES, Secretary.

WEBSTER.—Chartered, January, 1871. Meets in Telegraph Hall every Saturday evening. Visitors, especially students, always welcome.
H. C. RUSHMORE, President.
J. N. MORROW, Secretary.

RAILROAD TIME-TABLE.

KANSAS PACIFIC RAILWAY.

PASSENGER ARRIVES.

No. 2, going East	11:14 A. M.
No. 4, going East	3:47 A. M.
No. 1, going West	5:10 P. M.
No. 3, going West	4:33 A. M.
No. 7 (freight), going West	8:15 A. M.

Nos. 1 and 2 run daily; Nos. 3 and 7 run daily except Monday; No. 4 runs daily except Sunday. Passengers with tickets are carried on No. 7.
GEO. C. WILDER, Agent.

THE INDUSTRIALIST.

SATURDAY, JANUARY 25, 1879.

Students Enrolled Since Jan. 3, 1879.

NAME.	COUNTY.
Adams, Emma L.	Riley.
Abbott, Frank	Riley.
Allen, Albert H.	Nemaha.
Allen, Chester	Mitchell.
Axtell, Frank D.	Pottawatomie.
Axtell, Fred W.	Pottawatomie.
Ayres, Sarah	Shawnee.
Barnes, E. M.	Osage.
Bates, Charles W.	Vermont.
Bayles, Benjamin B.	Riley.
Beacham, Augustine	Marshall.
Blain, Arthur T.	Riley.
Breakbill, John	Riley.
Buchli, Bartholomew	Wabaunsee.
Buell, C. Stewart	Riley.
Buell, Delight A.	Riley.
Call, Henry L.	Shawnee.
Call, Charles M.	Shawnee.
Campbell, Emma	Riley.
Campbell, Ettie A.	Riley.
Campbell, May	Riley.
Chenoweth, Charles C.	Cherokee.
Chenoweth, J. W.	Cherokee.
Clarke, Ezra S.	Riley.
Clarke, Hattie P.	Riley.
Clarke, Mary	Riley.
Coburn, Ella	Saline.
Coleman, Edward P.	Iowa.
Cowell, William J.	Clay.
Cox, George A.	Riley.
Cox, Lizzie R.	Riley.
Cripps, Edward V.	Riley.
Culter, Horace M.	Sedgwick.
Dickson, A. F.	Johnson.
Donaldson, Alvin	Butler.
Donaldson, Flora	Butler.
Donaldson, George	Butler.
Durkee, Annette	Lyon.
Durkee, Orpheus	Lyon.
Eckman, Wilmer K.	Osborne.
Edmiston, Dora	Illinois.
Everhart, Logan W.	Labette.
Farnsworth, Henry E.	Lincoln.
Favour, William P.	Greenwood.
Flack, John B.	Dickinson.
Gist, John M.	Riley.
Gist, Joseph T.	Riley.
Glossop, Emma	Riley.
Goin, Edgar L.	New York.
Gordon, George A.	Jackson.
Griffing, William J.	Riley.
Gross, W. E.	Saline.
Hicks, Wm. G.	Cherokee.
Himes, Hattie	Riley.
Hopkins, Harry H.	Butler.
Hotchkiss, Charles S.	New York.
Hoyt, Emma	Riley.
Hulett, C. M.	Johnson.
Humphreys, George	Sumner.
Hunt, Henry L.	Cherokee.
Hunting, Cora M.	Riley.
Hutsell, Sallie	Cherokee.
Jacobs, James H.	Cherokee.
Jaquith, Walter W.	Davis.
Jeffrey, William J.	Riley.
Jeffrey, Fletcher	Riley.
Jewell, Fred	Butler.
Kent, John H.	Riley.
Keyes, George C.	Wabaunsee.
Kingsbury, Eddie L.	Coffey.
Kinsey, Dora	Shawnee.
Knipe, George D.	Riley.
Knostman, Emma	Riley.
Leach, Darwin S.	Mitchell.
Lewis, Issie	Riley.
Lewis, Jno. W.	Riley.
Light, Willis	Neosho.
Limbocker, Clyde	Pottawatomie.
Limbocker, Clarence	Pottawatomie.
Luse, William P.	Missouri.
Lynch, Fred C.	Cherokee.
Mails, Mattie	Pottawatomie.
Mann, John	Rice.
Mason, Silas C.	Ottawa.
McBratney, William	Nemaha.
McGuire, Katie I.	Johnson.
McNair, Alice E.	Wabaunsee.
McNair, J. L.	Wabaunsee.
McNair, S. E.	Wabaunsee.
Messenger, Charles	Cowley.
Miller, Edgar	Davis.
Millikan, Minnie E.	Johnson.
Mills, Hattie L.	Missouri.
Moore, Thomas R.	Smith.
Morgan, S. M.	Lyon.
Morrow, John N.	Johnson.
Myers, Wirt S.	Allen.
Neiman, Charles	Nemaha.
Nelson, Cassius C.	Illinois.
Nelson, Henry	Ottawa.
Neusbaum, Ada A.	Riley.
Neusbaum, Lincoln H.	Riley.
Noland, Manda	Riley.
Noyes, Amy E.	Wabaunsee.
Noyes, Ida L.	Wabaunsee.
Outt, J. F.	Montgomery.
Paine, Edwin C.	Lyon.
Parker, Grace	Riley.
Peckham, Almira S.	Riley.
Pettit, D. C.	Cherokee.
Platt, Henry A.	Riley.
Platt, Jennie Smith	Wabaunsee.
Randel, Alta	Nemaha.
Randel, Charles F.	Nemaha.
Randel, Henry A.	Nemaha.
Records, C. M.	Chautauqua.
Reed, C. J.	Pottawatomie.
Reeve, Mark A.	Lyon.
Reynolds, Theodore	Riley.
Richards, Bettie	Pottawatomie.
Richardson, Noble A.	Wilson.
Robinson, Joseph N.	Shawnee.
Rose, George E.	Cherokee.
Rose, Wm. N.	Cherokee.
Rushmore. H. C.	Jefferson.
Rust, Charles	Atchison.
Salter, Lewis A.	Montgomery.
Shartell, Cassius M.	Chautauqua.
Short, Burton L.	Cherokee.
Sickels, Maria E.	Missouri.
Sigman, George L.	Chautauqua.
Sikes, Wm. H.	Pottawatomie.
Sloan, John A.	Clay.
Smith, B. B.	Dickinson.
Snow, Cora L.	Riley.
Spooner, Alice G.	Clay.
Stiles, Charles H.	Wabaunsee.
Strong, Grace R.	Riley.
Tarrant, Will S.	Cowley.
Thackrey, Isaac	Riley.
Thackrey, Sarah	Riley.
Thompson, George F.	Cowley.
Ulrich, Cora L.	Riley.
Vaught, Cora	Butler.
Vincent, Ella E.	Riley.
Wahl, Charles A.	Indiana.
Wahl, Fred E.	Indiana.
Wahl, Wm. H.	Indiana.
Walters, Rosette	Davis.
Welch, C. R.	Harvey.
Welch, J. C.	Illinois.
Whaley, Rowena	Riley.
Whaley, Willie E.	Riley.
Whiteside, Wm. A.	Cherokee.
Wilson, Elmer E.	Cherokee.
Wilson, J. E.	Shawnee.
Winder, Ivaloo	Riley.
Wood, Clarence E.	Pottawatomie.
Woods, Albert O.	Sumner.
Woodworth, J. W.	Cherokee.
Wright, Robert H.	Ford.

VOL. IV. MANHATTAN, KANSAS, SATURDAY, FEBRUARY 1, 1879. No. 42.

THE INDUSTRIALIST.

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OF THE
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INDUSTRIAL EDUCATION.

The real value of an education to the student depends upon two things: First, the practical worth of the knowledge taught; and, second, the degree in which he makes it his own. Hence, the ability of any institution to give a practical education depends upon the kind and aim of the knowledge it teaches, and upon the thoroughness of the instruction therein. The State Agricultural College was directly endowed by Congress, and is guided by the State, for the specific purpose of furnishing to the industrial classes of Kansas a "practical" education, that is, "one fit for use." As its name indicates, and as the statistics of the industries of the State require, its chief work must be that of giving a useful and usable education to those who will engage in farming; and, therefore, the Farmer's Course must, from the nature of the case, be its main one.

FARMER'S EDUCATION.

Words and figures are merely instruments with which to record ideas. They are not themselves ideas, nor should they be made the chief end of an education. As a wagon is necessary to haul grain, so are they a necessary part of an education; but as the wagon is not the grain, so they are not the knowledge which the farmer converts into money. Hence, the classics and higher mathematics are not taught. But it will be noticed in the following course that so soon as the pupil acquires working skill in the use of the English language as a tool, and of figures and lines as mathematical tools, those arts and sciences which present knowledge that has a cash value to the farmer are taught as rapidly as their importance and thorough acquisition will permit. Studies numbered (1) and (4) in the second, third and fourth years are the spine of the course, to which the others are as ribs and muscle.

FARMER'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Practical Agriculture (advanced.)	1.	1. Botany, Entomology.	1.	1. Physiology.	1.	1. Drill in English.	1.
2. Geology, Mineralogy.	2.	2. Inorganic Chemistry.	2.	2. Rhetoric.	2.	2. Drill in Arithmetic.	2.
3. Polit. Economy, Practical Law.	3.	3. Practical Geometry.	3.	3. Algebra.	3.	3. Industrial Drawing.	3.
4. Zoology.	4.	4. Horticul., Landscape Gardening.	4.	4. Practical Agricul. (elementary).	4.	4. English Structure.	4.
5. Agricul. Chemistry, Meteorology.	5.	5. Organic, Analytical Chemistry.	5.	5. Physics.	5.	5. Adv'd Arithmetic, Book-keeping.	5.
6. Logic.	6.	6. Practical Surveying.	6.	6. Industrial Drawing.	6.	6. U.S. History, Industrial Drawing.	6.

WOMAN'S EDUCATION.

Nearly one-half of our students are females, and the Woman's Course is prepared expressly for their liberal and practical education. We have no doubt whatever that practical men and women, who understand what it means and what it seeks to do, will fully endorse it.

WOMAN'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Farm Economy, Special Hygiene.	1.	1. Botany, Entomology.	1.	1. Physiology.	1.	1. Drill in English.	1.
2. Geology, Mineralogy.	2.	2. Inorganic Chemistry.	2.	2. Rhetoric.	2.	2. Drill in Arithmetic.	2.
3. Polit'l Economy, Practical Law.	3.	3. Industrial Drawing.	3.	3. Algebra.	3.	3. Industrial Drawing.	3.
4. Zoology.	4.	4. Horticul., Landscape Gardening.	4.	4. English Literature.	4.	4. English Structure.	4.
5. Phys'l Geography, Meteorology.	5.	5. Organic, Household Chemistry.	5.	5. Physics.	5.	5. Adv'd Arith., Book-keeping.	5.
6. Logic.	6.	6. Household Economy.	6.	6. Industrial Drawing.	6.	6. U.S. History, Industrial Drawing.	6.

MECHANIC'S EDUCATION.

Because of the adaptedness of the leading course to the wants of the intelligent mechanic, it has been found practically unnecessary to diverge from the Farmer's Course. Additional studies, specially adapted to the mechanic's use, will be furnished in a Post-Graduate's Course.

A Dialogue on Education.

"Now, my children, you have told me how many members we have in the Legislature, who presides over each body, how laws are made, and how often a United States Senator is elected, and in return I will —"

I had reached this point the other evening, when there came a ring at the door-bell, and after a minute I discovered that Old Fogy had decided on another attack. He meant to give me fits this time. He brought along with him two or three school teachers, and they at once walked into my school-room. I did at first have a sign of "State Prison" over the door, so as to make it seem like a regular school-house to the pupils; but as they insisted upon regarding it as a novelty, I removed the sign.

"Well, you have been teaching, I see," observed Mr. Old Fogy.

"Yes. Six of these children belong in the neighborhood, and do not attend any regular school."

"We don't exactly agree on the school question, you know," said Mr. Old Fogy. "You did rather stump me the other night, but I'd like you to ask some of those teachers a few questions."

"Very well; Mr. Blank, please tell me how many bushels of wheat will make a barrel of flour?"

"Why, that isn't a regular question," he replied, as he looked around.

"Isn't it? Your arithmetic says that sixty pounds of wheat make a bushel, and because it does not say how many bushels make a barrel of flour, the farmer who is figuring on his year's supply must be left in ignorance. Here is Charlie — only nine years old — he may answer."

"From four and a half to five bushels," the boy replied.

"Now, Mr. Blank, can you name the more prominent stars?"

"I can, sir."

"I thought so, but can you tell me how many spokes there are in the front wheel of a buggy — can any of you?"

"I protest!" cried Mr. Old Fogy; but they didn't answer for all that.

"Well, Mr. Blank, can you translate Latin?"

"I can, sir."

"No doubt of it; but can you tell me how to preserve cider?"

"There you go again!" cried Mr. Old Fogy; but none of them could tell.

"Are you familiar with cube root, Mr. Blank?"

"I am."

"But can you tell me the salary of our Governor?"

None of them could.

"Try some of the ladies," suggested Mr. Old Fogy, after a few more questions.

"All right. Miss Blink, are you good in algebra?"

"I think so."

"And can you tell me how many yards of cotton to buy for a pair of pillow slips?"

"Why, no."

"Do you know what will take stains out of a table-cloth, or grease spots out of a carpet?"

"No, sir."

"Can you direct a cook to make pie-crust, or mix biscuit or bread?"

"No, sir."

"Do you know the average length of a lace curtain?"

"No, sir."

"Can you mix a mustard plaster, tell me a ready family antidote for poison, suggest a family remedy for a cold or sore throat, tell me how many yards in a bunch of dress braid, the number of yards of ticking to make a bed-tick, a way to remove paint from windows, or how to make gruel for the sick?"

"No sir."

"What are you driving at?" indignantly demanded Mr. Old Fogy.

"I'll let my class go and tell you. Let me first remark that I haven't asked a question which these children here can't answer. This little girl will promptly answer everything I have asked Miss Blank, and yet she is not ten years old. A month ago I told her that alum and brown sugar mixed together would relieve croup. A week ago, at dead of night, roused from sleep by her parents and the wails of her sick brother, she prepared the remedy, while her father was after the doctor and her mother was excited and helpless, and in half an hour the croup was gone. You ask what am I driving at? Women are called helpless, and we do not look to see them have presence of mind. Why are they so? Simply because they may know algebra by heart, and yet not know what is an antidote for almost every poison. They learn astronomy, and yet don't know what is good for a burn, or how to stop the nose bleed. They know all about botany, and yet can not tell what to do for a person who has fainted away."

"But I'm not a housekeeper," protested Miss Blank.

"No; well, every woman looks forward to marriage. They were born to it. Every female expects to marry rich, but not one in five hundred can so marry as to throw the entire responsibility of her house on hired help. Six out of ten may have a servant, but unless the mistress knows how things should go, what can be expected of the girl? While the lady sits in the parlor and realizes that she can draw, play the piano, and read French, the 'help' breaks, smashes and throws away, and the family is soon looking for a cheaper house. Miss Blank here may marry and never lift a hand, but if she knew every duty — if she knew remedies and recipes — wouldn't she have more self-reliance, and be better prepared for her responsibilities?

"Can you name one married lady in Detroit who makes use of algebra? Can you name one who is ever inconvenienced for the want of a knowledge of geometry? Do you know of one who wouldn't trade off all her Latin for a cure for corns?"

Mr. Old Fogy said he thought it looked as if we would soon have a snow-storm.

"Then take the other side. We do not teach our boys to be observing, and then we turn around and call them heedless. We pass the things of every-day life to let them grasp at the theoretical. They thus become helpless. They can name the planets, but they cannot give the length and width of a brick. They can name every ancient philosopher, but they can't put up the stove-pipe. They can figure in cube root, but they can't tell all-wool cloth from half cotton. We let them go to school for years, are proud to find that they know so much, and then discover that they can't tell why hickory wood will burn longer than pine; and we hear somebody say of them: 'He has a fine education, but no horse sense.'"

Mr. Old Fogy suggested that it was getting late.

"Now, then, some of you tell me of a business man who has made his money through a classical education. Tell me one lawyer who wins by flowery speeches, and I'll name a dozen who win by arguments which even boys can digest. Name a merchant who buys at random, as we educate children, and I will name the day of his failure. Name one who can tell you how to saw out a boot-jack, build an ice-box, putty in a pane of glass, mix paint, or hang a gate, and I'll show you that he is doing a safe business, dictated by observation and common sense. Last year a gentleman, with a fine collegiate education, opened a grocery store on a certain street in this city, asking no advice as to location, and making no observations on the movements of the public. He had got nicely opened, when a bootblack called in one day and bluntly said:

"Gimme a cent's worth of peanuts!"

"Peanuts! Boy, I don't keep a peanut stand!" was the indignant reply.

"You won't even keep a peanut stand here two months from now!" chuckled the lad, as he lounged out.

In five weeks there was a failure, and the grocer was $3,000 cash out of pocket in seven weeks' time. The observing boy knew that the store was too far down town, because he had watched the movements of the people who bought at retail. The grocer had been at Yale College, and he didn't deem it necessary to know a lamp-post from a salt barrel in order to establish a trade.

The other day a lady who can speak several languages, and who graduated with high honors at Vassar, wanted some mince-pies made and put away for New Year's. Neither of her servant girls knew how to make them, and so the lady went out among her neighbors. She tried to remember what they told her, but her pies were made without sugar or salt and with only one crust. When told why "they tasted like bass-wood chips," she burst into tears and sobbed out:

"They educated me to be an idiot instead of a woman!"—*Detroit Free Press.*

"There's Money in It."

As a politician significantly remarked concerning the United States Treasury — "there's money in it," so it may with equal truth be said there is money in whatever leads to the better education of those who have the management and cultivation of the soil. If there is still in this country a man who doubts that education with a view of making farming more profitable, and annually increasing the fertility of the soil, will not bear fruit equally with the so-called "learned professions," let him read and ponder over these eloquent sentences, from the record of the transactions of the Highland and Agricultural Society of Scotland for 1874.

From the exceptional educational advantages which Scotland has so long enjoyed, agriculturalists in this country have been greatly superior in point of instruction to those of most other countries; and it is also important to note that the increase in the value of landed property in Scotland has been exceptionally great. It was shown about three years ago, from reliable statistics produced by the government, when the Irish land question was before Parliament, that while the rental of land in Ireland had doubled during the previous hundred years, and that of England had tripled, the rental of Scotland had septupled itself in the same time. There has been then, in that space of time, an increase in the value of landed property in Scotland of five hundred per cent, against an increase of two hundred per cent in England, and one hundred per cent in Ireland. This is a remarkable fact, and there can be no doubt that the explanation of it is to be found chiefly in the vastly superior school system which Scotland has possessed, and in the intelligence and enterprise which it has been the means of developing among her agricultural classes.—*Grange Bulletin.*

THE men who work will thrive. Those who are idle will starve. There is no fear that God's wise and kind law, that men must earn their bread by the sweat of their brow, will be set aside.—*Gov. Seymour.*

THE INDUSTRIALIST.

SATURDAY, FEBRUARY 1, 1879.

JNO. A. ANDERSON, Managing Editor.

ASSOCIATE EDITORS, MEMBERS OF THE FACULTY.

Facts vs. Talk.

"None, or very few, of the brightest students of agricultural and industrial colleges ever think of becoming farmers, mechanics or merchants," is what the editor of an eastern periodical said in his last number, after having rehashed it about once every new moon for a quarter of a century. We do not know where he discovered this chunk of wisdom, and do not expect to have him mark the spot. Geologist Gressly, shaking hands one day with a newly-unearthed saurian, exclaimed, "My life for one intelligent answer from you." But the saurian did not answer; ages had petrified him. We know, however, that statistics, as far as we have them at command, prove the very opposite of his assertion; and we venture to say, too, that proportionately more students of classical institutions ultimately come to farming than students of industrial schools take to professions.

Of the one hundred and twenty-four graduates of the Michigan Agricultural College, up to 1876, forty-two are farming, eleven are professors in agricultural colleges, seven are fruit culturists, four are engineers, four are druggists, three are machinists, three are students in special sciences, eight are clerks and agents, two are grocers, one is a merchant, thirteen are teachers, one is an apiarist, one a mechanic, two are editors, and four have died. The list shows only nineteen deserters, or a little over fifteen per cent, which is a better showing than most classical institutions can make. Of the seventy-two graduates, up to 1876, of the Illinois Industrial University, only fifteen have abandoned the original vocations for which they prepared themselves at that institution. Of the graduates, nineteen are teaching sciences and industrial arts, thirteen are farming, eight are civil engineers, seven are machinists, and two are veterinary surgeons. Of the thirteen male students who have graduated at the Kansas Agricultural College since its reorganization, including three classes, four are farming, five are following different trades, one is professor of chemistry at this Institution, one is teaching, one is preaching, and one is dead. The female graduates have become good housekeepers.

Now, these are just a few statistical facts, and we regret that we can not bring more at present; yet we know that the ratio of deserters is the same small one wherever technical branches have been rationally taught. There are technical colleges, "literary kites with agricultural tails," as John A. Anderson calls them, that show different results; but to take them all into one bundle is a gross injustice, perpetrated upon earnest workers and enthusiastic philanthropists.—*J. D. Walters.*

[*Concluded from last week.*]

Peculiarities of Our College.

The second peculiaritiy of your College is its intense practicality.

It seems to be pervaded by the truths that life is short and real, and full of momentous work. Hence, you aim to throw your whole force on those things most directly and manifestly useful. The selection of the studies of your course seems to have been governed by their superior adaptation to the production of the best practical results. Nothing seems to be studied solely or chiefly because of its power to train the mind. I judge that your theory is, that mental training can be got as well by the pursuit of that which is intrinsically useful as of that without practical value. Your theory is true and full of common sense. The circle of human knowledge has become so large that even the most diligent students, in the years allotted to man, can only gallop around its circumference, or master a moderate segment of its vast surface. The mass of men, in the time they can give to study, can travel over but a very small arc, or range through a very narrow angle, of the great globe of human learning. They are soldiers on a forced march, whose little knapsacks, if crowded with more than a few essentials, will grow too heavy to be borne.

Of the many humbugs bequeathed us by a dark past, one of the most transparent is the idea that the best mental culture comes from studies otherwise almost or quite useless. The opposite is far more nearly true. The more useful the study, the higher the mental culture it gives. The best medical authorities agree that physical exercise taken for its own sake, is far less promotive of health than that which comes incidentally to some other pursuit. The fact holds good also in reference to mental exercise. It is indeed true that a dull tool may give great muscular development, so that even Solomon says, "If the iron be blunt, and he do not whet the edge, then must he put to more strength." The wood-chopper who for that reason fails to whet his axe, is akin to a fool. Give me every time the brains and skill that keeps the axe sharp, and thus, besides the exercise, gets a noble pile of wood ready for the wintry blast. If the practically useless gives the best training, then let us by all means throw away our reapers and mowers and threshers, and go back to the old-time pruning-hooks and scythes and kicking asses, especially the latter.

The intense practicality of your course has, as might be expected, imbued your students with a practical spirit. They are unusually full of life and bodily vigor; yet they seem to realize that they attend college to fit themselves to fight successfully the stern battles of life. They move as though they knew they must catch "Old Time" by his single forelock, or his otherwise bald pate would slip through their grasp. The same practical spirit pervades the literary societies of the College. Their programmes and exercises seem peculiarly fitted to bring out and render available every power, natural and acquired, that can aid in winning the victories of the future. Even your voluntary College prayer-meeting, under such a spirit, becomes a mighty power, filling those who cluster under its sacred influences with a deep sense of their stewardship, and impressing on them such views of their personal responsibility as augur a grand use of their talents during life, and a glorious accounting when the Master comes. This same practical spirit seems to make it possible, in a large measure, to gain the benefits and escape the perils of the co-education of the sexes; and thus aid in the solution of that much-mooted problem. From this practical spirit comes largely that good order which characterizes your institution, under a system of government so nearly equivalent to manly self-rule.

The third peculiarity of your College is the honor put upon manual labor.

In this respect, so far as I know, your institution stands pre-eminently alone. No other college honors bodily toil. An ill-concealed contempt for hard-handed industry, a supercilious sneer at bronzing labor, runs through them all. With them, bodily toil is at best a drudgery to be escaped, a necessity perhaps, but a humiliating one, nevertheless. You, on the contrary, have planted yourselves on the broad and solid ground that all honest toil is honorable. Reason, experience, observation, history and Revelation are all on your side. These all testify that the sweat of the brow is the complement of the sweat of the intellect, and that the latter cannot reach its grandest achievements without the former. Reason, observation and experience have crystalized their judgment on the subject into the axiom that a sound mind in a sound body is the ideal of perfection. They all teach that the highly-developed and heavily-taxed intellect cannot be kept well-poised and healthful without the labor that gives strength to the bodily frame. Let any man sweep critically with his most powerful glass the whole field of his observation and experience, and he will, I think, be surprised to find how large a part of the best thoughts and deeds of himself and others have sprung up and ripened amid hours of bodily toil. History, too, teaches that the overwhelming majority of those whose lives have benefited mankind, from Confucius to Washington, from Moses to Abraham Lincoln, have been inured to labor. The leaders of every age, from Noah to Bismarck, have either actually tilled the soil, or longed for life in the field. The two human intellects that tower highest in Revelation are David, the shepherd, and Paul, the tent-maker. The peerless Christ wrought as a carpenter.

On the other hand, much of the erroneous, baleful and mischievous thought and action of educated men, has sprung from neglect of bodily labor, with its balancing and restraining power. Satan does indeed find some mischief for idle hands to do. One of the great perils of our land, is the light esteem in which healthful toil is held. The disposition to live by one's wits, rather than honest, hard work, is poisoning the springs of our prosperity. Without a deep impression of the dignity of labor, our educated men will largely recruit the criminal classes most dangerous to the well-being and existence of society; and our colleges must fill up the ranks of counterfeiters, forgers, confidence operators, and trust betrayers, who are sapping the very foundations of the social structure, and filing its strong bands in sunder.

I am especially glad, therefore, to find one college where labor holds its rightful place of honor. To this honor put on toil is largely due the excellence of your students in their industrials; for men will not excel in anything they think even a little beneath them. Your printing department is an example in point. From my unpractical early education and a physical defect, I am not famed for clear chirography, especially in hurried pencil copy. I have read not a little proof from some of our largest and best printing establishments, yet I must say that the unrevised proof of the first part of this communication, laid before me last week, from the office of the INDUSTRIALIST, was equal in correctness to any I have seen, and far superior to most.

Allow me, in conclusion, to make a suggestion. The peculiar excellencies of your College must in time, as they become known, draw largely of the best class of students, not only from the industrial but also from the professional ranks. The process, however, with your present course may be slow; for old prejudices are strong, and old ruts are broad and deep. If, therefore, you would rapidly render your influence as far-reaching as it is beneficent, you must so arrange your course of study that it will be a series of short single-term courses, each complete in itself, yet so related as to form together a full and complete curriculum, sufficiently extended to give all needed facilities to the few specialists who will lead the van of the upward march of the industrial classes. You will thus enable many now prevented by want of time and means to get some of the benefits of your admirable institution. It is more for the general good to elevate the great masses even a little way, than to lift a few very high. If one of these short courses does nothing more than lead a number of bright young men to realize the nobility of labor and the intellectual possibilities of an industrial life, it will have done a great work. Such a series of short courses will necessitate considerable additions to your teaching force, but the wonderful State in which you dwell, I am persuaded, will give you all the aid you need in such an undertaking. If my very limited opportunities have enabled me to catch the secret of the power of Kansas, it is not in her broad prairies — beautiful in the sunlight, nor in her fertile acres, nor in her fruitful seasons; for in all these things she has many peers and some superiors. Her power is in the brains and pluck of her people. Such a people, properly enlightened, will not let such an institution as you have built up to their honor languish for want of anything they can give.

C.

THE INDUSTRIALIST.

SATURDAY, FEBRUARY 1, 1879.

The poem entitled "Our School-Mate," is taken from the last number of the *Gleaner*.

To the list of students enrolled since January 3d, 1879, printed on fourth page, should be added the names of George H. Dow and Albert E. Foreman, both of Riley county. This makes a total enrollment of 163.

The hedge on the south side of the road leading from the College to the city, has lately received a much-needed trimming. When the hedge on the opposite side is similarly trimmed, these fences will have been greatly improved, both in usefulness and appearance.

There was a meeting yesterday, in Prof. Shelton's lecture room, of all persons interested in the breeding of pure-bred stock in this and adjoining counties. We have no report of the meeting, but understand the object was to organize a stock breeders' association.

The usual monthly examination was held yesterday. This is the first one this term, and the new students are anxious to know what an estimate the professors have put upon their month's work. There are fewer drones at the College this year than at any previous time.

Those who have read any of the writings of Bob Burdette, the funny man of the Burlington *Hawk-Eye*, will be pleased to know that he is to lecture in Manhattan on the evening of the 10th,—one week from Monday next. All who have heard Mr. Burdette pronounce him a capital speaker.

Frank Jackson took us by surprise last Tuesday. He is the same old boy. It does one's heart good to occasionally meet such a good-natured, whole-souled man as Frank. It is strange how these railroad fellows do "swell out." Frank now kicks the beam at 180, and is sure of 200 before another winter.

The annual meeting of the Farmers' Institute will be held in Manhattan next week, commencing on Tuesday and closing on Friday evening. A number of able speakers will be here, practical subjects will be discussed, and every farmer who can should attend the sessions. Our students will find the general discussions at these meetings very profitable to them. They will be intensely practical.

The old orchard, near the new building, is receiving attention at the hands of the pruning-knife. The dead trees have been removed, and those remaining have been freed from all useless branches. We believe it is the intention of the Board to eventually do away with this orchard, as it occupies ground which is needed for other purposes, and obstructs the view of the College buildings from the city.

Prof. VanDeman's class in Practical Horticulture is quite large. We noticed them file out of the recitation room the other day, and, headed by their teacher, proceed to the orchard. Upon inquiring, we learned that they were receiving practical lessons in cutting scions, each student being required to exemplify his knowledge on this point by making a number of cuttings. Next week the class will consider the subject of grafting.

As we look down upon Manhattan, from our office window, we see numerous evidences of prosperity and of better times. We can count no less than a dozen additions or buildings which have lately been erected; and besides the new grist-mill, the new railroad bridge, and Thos. Jenkins' new residence, which are in process of erection or soon will be, there are many other permanent improvements which Manhattan will make during the coming season.

E. T. Carr, architect of the new building, was here on Monday, and the building was formally turned over to him by the contractors. We went through this structure a few days ago, and were delighted with the arrangement of the rooms, the quality of the work, and the excellent style in which everything is finished. The wood-work, plastering and painting are a credit to the men who held these contracts. Seats and window curtains have been ordered for the various rooms of the building, so that it cannot be occupied for some days.

We hear of a large immigration for Riley county this year. Many applications are received for farms to rent. Instead of taking immigrants away out on the frontier as heretofore, we understand that the railroads propose this year to use their influence to fill up the counties in the more central portion of the State. This is as it should be. We have ever opposed the idea of decoying new settlers out into the far West, so long as our eastern counties possess their present advantages. Thousands of acres of as good land as the sun ever shone on may be obtained at reasonable rates in Riley and adjoining counties. When we think of the social, educational, religious and commercial advantages of these counties over their western sisters, we wonder what kind of reasoning it takes to lead these settlers through our beautiful villages, over our lovely prairies, and across our crystal streams, and cause them to settle down contentedly amidst the hardships, toils and sacrifices to be endured in the West for years to come.

Although the weather was very stormy, a large number of Alpha Betas were present at their meeting yesterday afternoon. After opening exercises, the debate was called. The affirmative claimed that industrial schools had never been fairly tried, but that as soon as their efficiency was fully proven, they would supersede all others. The negative as stubbornly maintained that a country could not be well managed without professional colleges.

The orders of essay and select reading were well filled. Extemporaneous speaking was especially interesting. The subject of Quakers was very well ventilated. The *Gleaner* will be presented next week by Mr. George Rose and Miss Mails.

HOMBRE.

OUR SCHOOL-MATE.

Toll the bell in sadness.
Tearfully bow the head;
All are crushed in sorrow,
Henry Coe is dead.

One more bright blossom taken,
Loved and honored by all;
Gone from among our number,
To answer heaven's roll-call.

To the gentle, little sister,
Comfort goes from every heart;
For to lose so true a brother
Will make hers a bitter part.

All we find that's earth or earthly,
In the open casket lies,
With a heaven of beauty sleeping
In the deep and earnest eyes.

Never more shall sweet smiles kindle
That young face so still and fair;
Never more the sunshine mingle
With those waves of dark, brown hair.

Henry will not smile nor waken;
He will take his pleasant rest,
As though never hearts were aching—
Hearts of those that loved him best.

'Tis the second time death has come,—
The silent but fearful guest,—
And chosen from among our number
The brightest and the best.

He's gone! But no pen of mine can tell
The glory that burst on his sight,
When he entered that beautiful gate,
And was welcomed to heaven's light.

Notwithstanding the almost impassibility of the roads, there was a large attendance at the Webster Society last Saturday evening. After a sharp debate, it was decided that a man never forgets anything once learned. It was pleasing to listen to those grave and dignified Seniors discuss the laws of the indestructibility of force and matter, and to bring from the regions of antiquity a host of words in defense of their definition of the words "forget" and "learned." Your reporter was so overwhelmed by a cross-fire of lexicography, philosophy and metaphysics, that he has some doubt as to the impartiality of his action in voting as he did. But, all joking aside, the question was skillfully handled, showed great care and preparation, and opened up new fields of thought to every one present.

The extemporaneous speaking called forth many an expression of earnest thought and burst of eloquence. Mr. Buell's declamation was well delivered; and the *Reporter*, presented by C. M. Shartell, was a credit to the Society as a paper and to himself as an editor. The chairman of the committee on lectures reported that all bills incurred by the Society, arising out of the recent lecture, had been paid, and that there was a small amount left to the credit of the Society.

Six students expressed a desire to become members of the Society, and will be initiated at the next session. The following question was selected for discussion at the next meeting: "*Resolved*, That the introduction of labor-saving machinery has been beneficial to the laboring classes." Affirmative, Sloan and Morgan; negative, Dickson and Richardson. Mr. Mason was appointed for declamation, and Mr. Jewell for select reading.

A number of the members have expressed a desire to organize a moot legislature. No action was taken upon the matter Saturday evening but it will be discussed at the next session. A good time is expected, and a cordial invitation is extended to all students, and also to the public at large.

LEACH.

NATIONALIST ITEMS.

Twelve cars of bridge stuff had arrived on Monday.

We never heard of so many before wanting to rent farms as at present.

We understand that a grist-mill is to be put in operation at the new elevator.

Salina offers $10,000 to the Presbyterian College, if they will locate it at that place.

The ice in the rivers is fast becoming rotten, and will soon be gone, if the present warm weather holds on.

The weather of the past week has been of the best for drying up the ground, and thereby preventing the usual spring muds.

We noticed the arrival of a fine Poland China boar, billed to Chas. E. Allen, from Shepherd & Alexander, of Illinois, a few days ago.

Mr. Moore has begun work on the house he bought lately on Houston street. It is to be greatly enlarged and used as a boarding house.

Robert Thompson, of Green township, is chopping cord wood in timber which he planted nine years ago. Some of the trees are a foot in diameter.

A gang of prairie wolves crossed the Blue and went through the north part of town Monday night, making hideous howls along their line of travel.

A plank sidewalk has been put down in the school-house yard. This is a convenience that will be appreciated by the scholars during this muddy season.

Jacob Remele is having a stone wall built just east of his bakery, preparatory to extending the rear building to the front. The west wall has been up for some time.

The Congregational Church has received its last coat of plaster, and the painters will soon be through. Then one of the neatest churches in the city will belong to that society.

Clarence Wood, in attempting to open a door at the College with his knife, had the misfortune to have the knife slip and inflict a severe wound in one of his hands. It bled profusely. Dr. Lyman dressed the wound.

DIRECTIONS TO APPLICANTS.

TERMS OF ADMISSION.

Candidates for admission must be fourteen years of age, and pass a satisfactory examination in reading; arithmetic, through decimal fractions; and English grammar, to syntax. Classes are started at the beginning of each year in Drill in Arithmetic and Drill in English; and the pupil must have the knowledge above indicated, else he will be unable to retain position if admitted.

Pupils will be received at any time during the year, if able to pass an additional examination upon the subjects studied by the classes which they expect to enter. But they will find it greatly to their advantage to be present at the opening of each term, or as soon thereafter as posssble.

GRADES.

Both the Literary and Industrial recitations are graded daily upon a scale of 100; and an examination of all classes is made at the close of each month. A student not attaining an average grade of sixty is promptly dropped to a lower class, or excluded from the Institution until able to do so. The work of grading is strict and uniform in all the departments, and this process is rigorously used for sifting out incompetent and indolent pupils; thus more than accomplishing all that is designed to be effected by a "high standard of admission." Hence, the student's continuance in the College wholly depends upon his own action.

The course is based upon the determination to make the labor required in the preparation of one industrial and three literary recitations as much as the average student can perfectly perform, in ten hours a day. We design to give the pupil the worth of the time expended at College; and, in order thereto, he must do a full day's work with brain or hand. Only those students who can maintain a standing of ninety in each study will be allowed to take more than the prescribed number of recitations; and no one will be permitted to have less than one industrial and three literary recitations.

RELIGIOUS.

Unless otherwise directed by parents, students are required to attend chapel at 8:30 A. M. on academic days, and divine service once every Sabbath.

EXPENSES.

There are no charges whatever for enrollment, attendance or instruction in the regular courses; nor are there any "contingent fees" for the repair of buildings, for the use of books or apparatus, for diplomas, or the kindred privileges usually grouped under the term "contingent." Male students are furnished instruction, the use of apparatus, instruments or tools, in both the literary and industrial classes marked out for them, without any charge. And the same is true of female students in the regular classes provided for them. Printing and Telegraphy are industrials primarily provided for the education of female students, and male students taking either of these are charged $1 per month for use of instruments.

Instrumental music is a fine art or "accomplishment," rather than a mechanical art. We do not place it among our "industrials" in the same sense, or for the same purpose, that we do those provided for teaching the trades. Accordingly, a fee of $12 per term, or seventy-five cents per week is required from female students for tuition and the use of pianos or organs.

The only charge made for material in either the literary or industrial departments is for the chemicals used by students in laboratory practice, which are furnished at wholesale prices, and amount to but a small sum.

Furnishing an absolutely free education is as much as can be reasonably asked; and the Institution neither boards, clothes, nor supplies the student with text-books. Boarding can be obtained in private families at from $2.75 to $4 per week. Washing costs from seventy-five cents to one dollar per dozen. Text-books, which can be procured in Manhattan, cost from $2 to $5 per term.

No student need expend over $5 per week; and many of our best pupils are living at $1.25 per week. Students desiring to "board themselves" can do so at from $1 to $2 per week. In a club of four young men, renting a house, the average cost to each for the term was $1.11 per week.

LABOR.

Manual labor by the students may be for either of two purposes: First, to acquire skill in a given art; second, to earn money. In the first case, the labor is educational; in the second, it should be paid for by the party benefited.

Educational Labor.—Manual labor in the recitations of the Industrial Departments, like mental labor in those of the Literary Departments, is purely educational and will not be remunerated. While the interest of the student will be held paramount in the direction of this labor, the practice necessary to dexterity will be required.

Remunerated Labor.—When the Institution needs labor on the Farm or elsewhere which is not educational, but simply for its own profit, and which a student is able and willing to perform, it becomes an employer instead of a teacher, and he an employe instead of a scholar. It pays for work, he works for pay. The relation between them is commercial, not educational; and both parties must act upon business principles. Hence, the College furnishes only such employment as its own interests require, and will pay according to the value of the service rendered at from seven to ten cents an hour.

AMOUNT EARNED.

It is impossible to predict how much a given person can earn, since that depends upon what he can do and what work there is to be done. Hence, it is wholly impossible for us to answer the question so often asked: "Do you think I can meet my expenses by work?" Some students make one-half their expenses, some the whole, and exceptional men have made more than expenses. As a rule, a faithful boy skilled in farm work can earn half his expenses on the Farm or in the Nursery. During the year he can ordinarily acquire sufficient skill in the wood or iron shops to enable him to make articles for sale. The whole question is one for his own consideration and decision. We can teach all who come, but cannot absolutely *promise* anything more. Hitherto we have refrained from holding out strong inducements respecting the amount of labor we might have to offer; but in view of the fact that during each of the last three years we have had more to do than the students could perform, we are inclined to give greater and positive encouragement on this point. Any boy who is in dead earnest, who is familiar with farm operations, and who can raise $50 to start with, should be able to carry himself through the four years' course. And certainly this places an education within the reach of every determined boy. As yet we are unable to offer similar advantages to girls, not requiring labor in the College departments which they can perform.

RULES.

1. Behave as a true man or woman should, at all times and in all places.

2. Attend to your own business promptly, thoroughly and courteously; and vigorously let alone that of other people.

3. Penalty: "Leave!"

PUBLICATIONS.

The "Hand-Book," published in 1874, containing a full discussion of the educational question and the aims of the Institution, will be forwarded to any one desiring it.

THE INDUSTRIALIST, a weekly journal edited by the Faculty and published by the Printing Department, contains original and seasonable articles on the Farm, Orchard, Trades, Sciences, and Education. Price, 75 cents a year. Address A. A. Stewart, Manhattan.

CALENDAR.

Winter Term 1879.—Begins Friday, January 3d, 1879.

TO NEW STUDENTS.

Bring the text-books you have been using. On arrival, first arrange for your boarding. A. A. Stewart, Sup't Printing Department, will furnish information, either by letter or on application, concerning boarding places or rooms for rent. Report to the President at 8:30 A. M., immediately after chapel, for enrollment.

For further information apply to Jno. A. Anderson, President, Manhattan, Kansas.

LITERARY SOCIETIES.

ALPHA BETA.—Chartered, December 26th, 1870. Meets in College building every Friday at 2 P. M. Ladies admitted. New students cordially invited to attend. W. H. SIKES, President.
MISS MARIA E. SICKLES, Secretary.

WEBSTER.—Chartered, January, 1871. Meets in Telegraph Hall every Saturday evening. Visitors, especially students, always welcome.
H. C. RUSHMORE, President.
J. N. MORROW, Secretary.

RAILROAD TIME-TABLE.

KANSAS PACIFIC RAILWAY.

PASSENGER ARRIVES.

No. 2, going East	11:14 A. M.
No. 4, going East	3:47 A. M.
No. 1, going West	5:10 P. M.
No. 3, going West	4:33 A. M.
No. 7 (freight), going West	8:15 A. M.

Nos. 1 and 2 run daily; Nos. 3 and 7 run daily except Monday; No. 4 runs daily except Sunday. Passengers with tickets are carried on No. 7.
GEO. C. WILDER, Agent.

THE INDUSTRIALIST.

SATURDAY, FEBRUARY 1, 1879.

Students Enrolled Since Jan. 3, 1879.

NAME.	COUNTY.
Adams, Emma L.	Riley.
Abbott, Frank	Riley.
Allen, Albert H.	Nemaha.
Allen, Chester	Mitchell.
Axtell, Frank D.	Pottawatomie.
Axtell, Fred W.	Pottawatomie.
Ayres, Sarah	Shawnee.
Barnes, E. M.	Osage.
Bates, Charles W.	Vermont.
Bayles, Benjamin B.	Riley.
Beacham, Augustine	Marshall.
Blain, Arthur T.	Riley.
Breakbill, John	Riley.
Buchli, Bartholomew	Wabaunsee.
Buell, C. Stewart	Riley.
Buell, Delight A.	Riley.
Call, Henry L.	Shawnee.
Call, Charles M.	Shawnee.
Campbell, Emma	Riley.
Campbell, Ettie A.	Riley.
Campbell, May	Riley.
Chenoweth, Charles C.	Cherokee.
Chenoweth, J. W.	Cherokee.
Clarke, Ezra S.	Riley.
Clarke, Hattie P.	Riley.
Clarke, Mary	Riley.
Coburn, Ella	Saline.
Coleman, Edward P.	Iowa.
Cowell, William J.	Clay.
Cox, George A.	Riley.
Cox, Lizzie R.	Riley.
Cripps, Edward V.	Riley.
Culter, Horace M.	Sedgwick.
Dickson, A. F.	Johnson.
Donaldson, Alvin	Butler.
Donaldson, Flora	Butler.
Donaldson, George	Butler.
Durkee, Annette	Lyon.
Durkee, Orpheus	Lyon.
Eckman, Wilmer K.	Osborne.
Edmiston, Dora	Illinois.
Everhart, Logan W.	Labette.
Farnsworth, Henry E.	Lincoln.
Favour, William P.	Greenwood.
Flack, John B.	Dickinson.
Gist, John M.	Riley.
Gist, Joseph T.	Riley.
Glossop, Emma	Riley.
Goin, Edgar L.	New York.
Gordon, George A.	Jackson.
Griffing, William J.	Riley.
Gross, W. E.	Saline.
Hicks, Wm. G.	Cherokee.
Himes, Hattie	Riley.
Hopkins, Harry H.	Butler.
Hotchkiss, Charles S.	New York.
Hoyt, Emma	Riley.
Hulett, C. M.	Johnson.
Humphreys, George	Sumner.
Hunt, Henry L.	Cherokee.
Hunting, Cora M.	Riley.
Hutsell, Sallie	Cherokee.
Jacobs, James H.	Cherokee.
Jaquith, Walter W.	Davis.
Jeffrey, William J.	Riley.
Jeffrey, Fletcher	Riley.
Jewell, Fred	Butler.
Kent, John H.	Riley.
Keyes, George C.	Wabaunsee.
Kingsbury, Eddie L.	Coffey.
Kinsey, Dora	Shawnee.
Knipe, George D.	Riley.
Knostman, Emma	Riley.
Leach, Darwin S.	Mitchell.
Lewis, Issie	Riley.
Lewis, Jno. W.	Riley.
Light, Willis	Neosho.
Limbocker, Clyde	Pottawatomie.
Limbocker, Clarence	Pottawatomie.
Luse, William P.	Missouri.
Lynch, Fred C.	Cherokee.
Mails, Mattie	Pottawatomie.
Mann, John	Rice.
Mason, Silas C.	Ottawa.
McBratney, William	Nemaha.
McGuire, Katie I.	Johnson.
McNair, Alice E.	Wabaunsee.
McNair, J. L.	Wabaunsee.
McNair, S. E.	Wabaunsee.
Messenger, Charles	Cowley.
Miller, Edgar	Davis.
Millikan, Minnie E.	Johnson.
Mills, Hattie L.	Missouri.
Moore, Thomas R.	Smith.
Morgan, S. M.	Lyon.
Morrow, John N.	Johnson.
Myers, Wirt S.	Allen.
Neiman, Charles	Nemaha.
Nelson, Cassius C.	Illinois.
Nelson, Henry	Ottawa.
Neusbaum, Ada A.	Riley.
Neusbaum, Lincoln H.	Riley.
Noland, Manda	Riley.
Noyes, Amy E.	Wabaunsee.
Noyes, Ida L.	Wabaunsee.
Outt, J. F.	Montgomery.
Paine, Edwin C.	Lyon.
Parker, Grace	Riley.
Peckham, Almira S.	Riley.
Pettit, D. C.	Cherokee.
Platt, Henry A.	Riley.
Platt, Jennie Smith	Wabaunsee.
Randel, Alta	Nemaha.
Randel, Charles F.	Nemaha.
Randel, Henry A.	Nemaha.
Records, C. M.	Chautauqua.
Reed, C. J.	Pottawatomie.
Reeve, Mark A.	Lyon.
Reynolds, Theodore	Riley.
Richards, Bettie	Pottawatomie.
Richardson, Noble A.	Wilson.
Robinson, Joseph N.	Shawnee.
Rose, George E.	Cherokee.
Rose, Wm. N.	Cherokee.
Rushmore. H. C.	Jefferson.
Rust, Charles	Atchison.
Salter, Lewis A.	Montgomery.
Shartell, Cassius M.	Chautauqua.
Short, Burton L.	Cherokee.
Sickels, Maria E.	Missouri.
Sigman, George L.	Chautauqua.
Sikes, Wm. H.	Pottawatomie.
Sloan, John A.	Clay.
Smith, B. B.	Dickinson.
Snow, Cora L.	Riley.
Spooner, Alice G.	Clay.
Stiles, Charles H.	Wabaunsee.
Strong, Grace R.	Riley.
Tarrant, Will S.	Cowley.
Thackrey, Isaac	Riley.
Thackrey, Sarah	Riley.
Thompson, George F.	Cowley.
Ulrich, Cora L.	Riley.
Vaught, Cora	Butler.
Vincent, Ella E.	Riley.
Wahl, Charles A.	Indiana.
Wahl, Fred E.	Indiana.
Wahl, Wm. H.	Indiana.
Walters, Rosette	Davis.
Welch, C. R.	Harvey.
Welch, J. C.	Illinois.
Whaley, Rowena	Riley.
Whaley, Willie E.	Riley.
Whiteside, Wm. A.	Cherokee.
Wilson, Elmer E.	Cherokee.
Wilson, J. E.	Shawnee.
Winder, Ivaloo	Riley.
Wood, Clarence E.	Pottawatomie.
Woods, Albert O.	Sumner.
Woodworth, J. W.	Cherokee.
Wright, Robert H.	Ford.

The New York Tribune.

"The Leading American Newspaper."

For 1879 THE TRIBUNE hopes to continue with increasing success, the work and the methods which through the year now ended have won such popular approval and borne such ample fruit.

A year ago THE TRIBUNE pointed out the danger to the tranquility of the country, to the Treasury, the currency and the National honor, from the alliance then forming between the Solid South and Tammany Hall. It declared that against this danger the old party of freedom, still the party of the churches and the school-houses, was the only bulwark: and in behalf of that party, it renewed the old appeal to the National conscience, and the enlightened self-interest of the tax-payers.

In all this events have justified it. The year has disclosed the danger THE TRIBUNE predicted, and brought the deliverance it promised. It now asks those who think well of what it did in this eventful year to help widen yet further its influence by increasing its circulation for the next. It labored to harmonize the Republican party; to divert Republicans from attacks upon each other to attacks upon the common enemy. It exposed Southern claims. It denounced the Southern suppression of the negro vote. It resisted debasement of the currency. It endeavored to sustain the Treasury in advancing to specie payments. It strove to promote a reform in the Civil Service. It vindicated the legitimacy of the Republican Administration. It crushed assailants by demonstrating the infamous efforts of the Democratic leaders to buy the Presidency they had fairly lost at the polls. For these services a distinguished member of the Administration has declared that the Republican party and the country owe THE TRIBUNE a debt of gratitude so great that, despairing of full payment immediately, they must imitate the Treasury and fund it! Leading Republicans outside of and even opposed to the Administration, are everywhere heartily expressing similar opinions.

THE TRIBUNE now warns the country that, inspiring as the late elections have been, they do not end the danger. The Democrats and the Greenbackers, if united, could have reversed the verdict. They may be united next time. They already have the Solid South to begin with, as well as the evidence of the control their union would give in many of the Western States. To prevent such a union from sweeping the country, we must keep the Republican party in the highest state of discipline and efficiency, and must educate the voters. If friends know any better agency for such political education than THE TRIBUNE, by all means use it; if not, they surely ought to make every effort to push THE TRIBUNE'S circulation.

THE TRIBUNE is now spending more labor and money than ever before to deserve the distinction it has long enjoyed of the largest circulation among the best people. It is the only newspaper in the country maintaining a special telegraphic wire of its own between its office and the National Capital. Its Washington dispatches are much the fullest anywhere published. Its London correspondent, George W. Smalley, is recognized as the foremost in that field, on the American Press. Its other foreign correspondence ranks exceptionally high. Its scientific, religious and literary intelligence is often fuller, and generally more newsy, than that furnished by journals expressly devoted to these specialties. Its critical departments, all conducted by the old heads, remain the acknowledged authorities:

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THE INDUSTRIALIST

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FARMER'S EDUCATION.

Words and figures are merely instruments with which to record ideas. They are not themselves ideas, nor should they be made the chief end of an education. As a wagon is necessary to haul grain, so are they a necessary part of an education; but as the wagon is not the grain, so they are not the knowledge which the farmer converts into money. Hence, the classics and higher mathematics are not taught. But it will be noticed in the following course that so soon as the pupil acquires working skill in the use of the English language as a tool, and of figures and lines as mathematical tools, those arts and sciences which present knowledge that has a cash value to the farmer are taught as rapidly as their importance and thorough acquisition will permit. Studies numbered (1) and (4) in the second, third and fourth years are the spine of the course, to which the others are as ribs and muscle.

FARMER'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Practical Agriculture (advanced.)		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit'l Economy, Practical Law.		3. Practical Geometry.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. Practical Agricul. (elementary).		4. English Structure.	
5. Agricul. Chemistry, Meteorology.		5. Organic, Analytical Chemistry.		5. Physics.		5. Adv'd Arithmetic, Book-keeping.	
6. Logic.		6. Practical Surveying.		6. Industrial Drawing.		6. U. S. History, Industrial Drawing.	

WOMAN'S EDUCATION.

Nearly one-half of our students are females, and the Woman's Course is prepared expressly for their liberal and practical education. We have no doubt whatever that practical men and women, who understand what it means and what it seeks to do, will fully endorse it.

WOMAN'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Farm Economy, Special Hygiene.		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit'l Economy, Practical Law.		3. Industrial Drawing.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. English Literature.		4. English Structure.	
5. Phys'c'l Geography, Meteorology.		5. Organic, Household Chemistry.		5. Physics.		5. Adv'd Arith., Book-keeping.	
6. Logic.		6. Household Economy.		6. Industrial Drawing.		6. U. S. History, Industrial Drawing.	

MECHANIC'S EDUCATION.

Because of the adaptedness of the leading course to the wants of the intelligent mechanic, it has been found practically unnecessary to diverge from the Farmer's Course. Additional studies, specially adapted to the mechanic's use, will be furnished in a Post-Graduate's Course.

Teach the Girls How to Earn an Honorable Living.

Is it not time that people generally, not fanatics and paupers only, should recognize the fact that women must live; that they must pay for their living; and that like men they must earn, before they can spend, this payment.

The doctrine that the world owes a man a living is considered a very dangerous one; but the world seems blind to the fact that it is as pernicious to women,— to all women at least who are not happily and comfortably married while young, and whose matrimonial happiness and comfort do not endure to old age.

To that minor and blessed class, these thoughts do not refer; but for that other and major class,— the unsupported women of all ages, in all lands, all conditions of civilization and degrees of intelligence, the unmarried, the widowed, wives with dependent husbands and children,— we would beg the sincere sympathy of both men and women. Their struggles for an honorable subsistence are harder than men's because they are women; but they are tenfold harder because they are not educated either to earn, or to save, or to spend money. Most women learn to perform the ordinary domestic duties of housekeeping more or less skillfully; a few become fine artists in home-making and home-keeping, wifehood and motherhood, while many are indifferent bunglers in all; but all of them do home work in the usual haphazard way of woman's work the world over, sometimes early, sometimes late, sometimes thoroughly, sometimes slightingly, never beginning nor leaving off at a regular hour, seldom knowing whether their work is profitable or unprofitable, and never knowing what they are going to get for it.

With this kind of education from time immemorial, is it wonderful that women should be found inefficient when they are subjected to the routine of men's business habits? They cannot be regular; it was not born in them; it is torture to them, and always will be to the women who are mothers now. They are too old to learn, or rather to unlearn their irregular habits; yet thousands of them will be compelled to go forth from their homes and do what a strong husband does for them now, and then all, except the rare one in five thousand, perhaps, who is strong of nerve, and fiber, and heart, and brain, will hear the stinging cry from good business men: "Women do not know how to work; women do not know the value of a dollar; women cannot be depended upon; we cannot afford to employ them."

Everybody applauds the wealthy man who gives his son a trade, as well as a collegiate education, appreciating that knowledge is a lasting fortune, while riches may depart at any time; and the boy who grows to manhood with riches only for his capital, is looked upon as an imbecile, incapable of taking care of his inheritance and untrustworthy with other people's business; yet the girl who grows up doing alternately as she chooses and as half a dozen others choose for her, is expected, if she loses her fortune or her husband, to go to work and earn her own and her family's living like a man, or if she is not expected to do it, it is thought that she should do it without any weakening or complaining.

It is one of the truest marks of ignorance, snobbishness and vulgar pride, to hear parents say, "My daughters shall never earn their own living;" and one of the best evidences of real intelligence of the needs and necessities of life, is to here a parent say, as did recently in our hearing, one of the wealthiest women in the town in which she lived, that her daughters should never leave their father's roof and her care until they knew how to earn an honest living, and had learned, at some *trade*, habits of promptness and regularity which would make them efficient workers. If every mother and father, whether rich or poor, would give their daughters, as well as their sons, this foundation for comfort and morality, they would save more women from the debasing slavery of prostitution than in any other way.

We know that with many there is the honest fear that the learning of a trade would make their daughters unwomanly, unladylike; but they cannot escape the knowledge that such an apprenticeship may be forced upon them by adversity at some time of life: and is it not better and safer that it should come while they have a home and friends to shelter, guide and guard them? Moreover, it is almost impossible for business habits to be learned by a woman in mature years, after she has grown up utterly regardless of them; just as it would be impossible to make a good business man of one whose youth had been spent without any training. Youth is the time to learn; impressions received then are more lasting and more easily taken up in after life.

A business education, guided by intelligent and loving parents and judicious teachers, cannot injure any sensible girl, any more than it can make sensible women of naturally silly girls, though it may help to do that; and if in after years she is provided for without need of exertion outside of her own home, the knowledge will help her to be a good wife and mother, than which position no happier or nobler awaits any woman.—*Kansas Farmer.*

The Live Farmer.

The live farmer is one who aims to make the farm pay. In order to do this, he does not follow some traditional routine because those who have preceded him made a living thereby; but he recognizes the fact that mind governs matter, and that farming is a business that now requires more general and special information than is required in any other. On the old plan, old ideas and old implements were good enough. No agricultural journals or books were required. New ideas were superfluous and study useless. Such farming, had it not been for the abundance of plant food in the freshly-cleared lands, would have made it a losing business years ago.

The live farmer must now set about the restoration of the much-needed elements of which the "good old way" robbed the soil. The live farmer must read, reflect, decide and act. His first great aim will be to raise the largest crops possible, with the least possible expense. The live farmer recognizes the fact that he is, to some extent at least, a manufacturer, and that it is therefore necessary for him to understand his machinery and his material, at least so far as the present style of agricultural knowledge qualifies him to do so. He must recognize the fact that scientific farming does not mean the adoption of fanciful theories, but it means learning from the laws of nature and the experience of others. The live farmer recognizes the fact that the present low prices make farming exceedingly unprofitable, yet he does not waste valuable time in mourning over the matter, but sets his wits to work to devise ways and means whereby the cost of production can be lowered. The facts are, that the *live* farmer is always wide awake in regard to every matter relating to his interest, and is not unmindful of the fact that economy and retrenchment are not the least among the important factors that are essential in bringing about looked-for and desired results.—*Grange Bulletin.*

America's Supplies Abroad.

Steadily is the demand for American productions growing in foreign countries. And why is it? First, because we can supply many things at a less cost than they can be produced for at home; second, because the articles we export are superior in quality; and, third, because the supply at home is far short of the demand. England draws on us largely every year for breadstuffs. Turkey and the country roundabout has recently looked to America for food. This call from the Black Sea region was necessitated by late wars, but the introduction of our articles there insures for us a permanent market for more or less. France is a good customer of ours. And now we read that the State Department recently received a dispatch from Mr. Schenck, the United States Consul at Barcelona, Spain, announcing the arrival there of the first cargo of wheat that ever was imported to that place from America. The cargo consisted of 72,000 bushels of Minnesota wheat, was carried in an English steamer, and the freight cost $18,000. There was great excitement at the place, and the grain was pronounced equal in quality to any ever received in the market. The Consul reports that one firm at once engaged three British steamers to bring three cargoes of American wheat to Barcelona for this new development of our trade. Let us once get a good foothold in Spain and we will have another valuable customer. The great grain fields of Russia yield an immense surplus, but it is far from being enough to supply the increasing demand. We will have Russia to compete with in some markets, as now in France, where there is in wheat alone a shortage of 28,000,000 bushels. But the competition will be healthy.

The questions of exporting and importing are indeed important to the people of America. In years past, we have added greatly to the weight that has kept our noses on the grindstone by allowing the balance to show up heavily against us. Hard times taught us better things, and now the scale turns in our favor. Let us keep it so, and very soon we will realize that we are indeed traveling in the straight and narrow path that leads to better times — prosperity.—*Spirit of Kansas.*

IT is a somewhat remarkable fact that we consume but a small portion of the cheese we manufacture; and, notwithstanding the increase in our population, the home consumption of it is diminishing. A few years ago the United States consumed four and one-half pounds of cheese per capita, but now we are using only three pounds per capita. The fear of introduction of the oleomargarine product will still further diminish it, notwithstanding the recent introduction of dairy cheese as a ration in the United States Army.

RED clover came from Flanders to England, and from England to the United States. Its adoption was strongly urged by Sir Richard Weston in 1645, who saw it growing near Antwerp in 1644, and noticed the speed of its growth and how soon it recovered after mowing. In ten years it had spread through the kingdom and made its way to Ireland.

A LONDON philosopher says there is something inexpressibly sad about the music of a church organ — while the collection is being taken.

A PHILOSOPHICAL Senior describes a Soph's mustache as "not a tangible entity, but a mental concept."

"SELAH" is the "whoop la" of the psalmist.

THE INDUSTRIALIST.

SATURDAY, FEBRUARY 8, 1879.

E. M. SHELTON, Managing Editor.

ASSOCIATE EDITORS, MEMBERS OF THE FACULTY.

INCREASING demands for attention to other matters render it impossible for me to devote to the INDUSTRIALIST the attention which it merits; and Prof. E. M. Shelton having kindly consented to assume the management, the change is made with this number. As heretofore, articles will be furnished by the several members of the Faculty. While heartily congratulating our readers upon the change, it is with genuine and tender regret that I part from them, even should the separation be but temporary. JNO. A. ANDERSON.

Smut in Wheat and Oats.

What is smut in wheat? Is it a parasite? What is the remedy? Is the smut in oats the same as that of wheat? By answering the above, you will very greatly oblige J. R. E. P.

Great Bend, Kan., Jan. 16th, 1879.

Smut in wheat and oats are the developments of a parasitic fungus plant known technically as *Ustillago typhoides*. This parasite is not confined to wheat and oats, but is found also infesting the grain of barley, rye, millet, and many kinds of grasses. There are reasons to suppose that rust in wheat is another form of development of this same fungus. It gets its name (smut) from the black dusty mass into which the germ is converted, under its influence, at an early stage of its growth.

From the fact that this fungus is propagated from the spores which, adhering to the seed are sown with it, various remedies looking to the destruction of these spores are employed with good effect. One writer reports that in his section — western New York — the seed wheat was washed in strong, hot brine, and then dried by mixing with air-slaked lime, and no smut was seen afterwards in the crop. A steep often used is four ounces of blue-stone (sulphate of copper) dissolved in one gallon of water; this is poured over five bushels of seed and left to soak twenty-four hours.—*Professor Shelton.*

Slop Ponds.

This season, for the first time in the history of Kansas, typhoid fever has appeared in many different parts of the State. This disease is too dangerous to be trifled with. It never appears without a local cause. That cause is not the ordinary miasm arising from vegetable decay, which fills the air with the germs of chills and agues and bilious fevers. It is a different, though perhaps somewhat kindred, influence. While it may come from the rotting of vegetable matter in cellars, it seems to result chiefly from the drainage of privies and the decay of slops and kitchen refuse containing animal matter, about houses and wells. These exciting causes seem to act most vigorously when they get into the water supply. In this State, there is usually on the surface a bed of clay from one to twenty feet thick, under which comes sand and gravel. There is very little filtering power in either the sand or gravel; and when they are reached, these foul influences get into the water, even at considerable depths. We must, therefore, depend on our clays for the protection of our wells against them. If the kitchen refuse is for years either drained or thrown into one spot, and that spot is anywhere near the well, or if a privy is located near it, the fermenting mass eventually saturates the ground and works deeper and deeper until ulcer-like it eats through the clay, and then the poison soon finds its way into the water supply, which may yet seem perfectly pure and clear. This process is facilitated by the great tendency of our clays to crack with intense heat or cold. The effective remedy is to get a new well, out of the reach of these foul influences. If this cannot be done, then change the localities of your slop ponds and privies, and thoroughly disinfect the old ones. Use sparingly the water, and never drink it unboiled.

But typhoid fever comes not only from impure water, but from impure vapors. Kitchen slop ponds, seething in the summer sun, exhale typhoid vapors which fill the air with the germs of the disease. They become especially dangerous, if located near and south or southwest of the house, for the summer winds carry the poisonous vapors directly into the dwelling. Therefore, empty your slops far away and in some other direction from the house. Purify the old pest-breeders by a liberal use of some cheap disinfectant, such as a strong solution of sulphate of iron, or copperas. C.

Soil Analysis from a Farmer's Standpoint.

We know of no question connected with what is somewhat vaguely called scientific farming, that is so seductive, especially to young farmers having a smattering of scientific knowledge, as soil analysis and related subjects. The idea, as we have heard it stated, is something like this: First, analyze the soil and find its exact composition; then, in the same way, find the composition of all the various agricultural plants. If the soil is rich in some one element, as potash or the phosphates, grow upon it that plant into whose composition this element enters most largely. Again, if the soil is lacking in some one or more of the elements, how easy to apply this directly as compared with hauling manure, summer-fallowing, clovering, or some other old-fogy method! In some such form as the above, this idea has been thrust upon the farmers for upwards of fifty years. Said the nobleman to his gardener, "The time is not far distant, Sandy, when we shall carry the manure of a field in one vest pocket." "Aye, sir," answered the canny Scot, "an' the crap will go hame in t'other!"

This doctrine rose and flourished with Liebig's famous mineral theory of manures, and both got their quietus at the hand of Mr. J. B. Lawes, after more than ten years of careful experimentation. Of late there have been some signs of a revival of interest in this subject. In the outset it should be remembered that scientific and practical farming are widely different subjects, and this difference is seen in methods and objects alike. Chemical analysis, for example, might show some one element lacking in the soil, but science cannot decide whether it will pay to replace this: practical knowledge, which takes into account all the surroundings of the farmer,— labor, markets and prices,— can alone decide the question. Moreover, the growth of crops is dependent upon many other conditions besides the actual composition of the soil; as, its mechanical condition, drainage, the solubility of its elements, and other circumstances which analysis cannot detect.

Another curious circumstance, which shows in a very striking manner our ignorance of the underlying principles of agriculture, is seen in the application of fertilizers to the various crops. According to the chemical analysis theory aforementioned, such elements should be returned to the soil, in the form of manures, as enter most largely into the composition of the grain. In actual fact, we do no such thing. The highly nitrogenous, leguminous crops— clovers, peas, beans, etc.,— give the largest returns from a dressing of plaster, or sulphate of lime, which contains no trace of nitrogen. On the other hand, this sulphate of lime, when applied to cereals, is of doubtful value.

Speaking of his experiments with manures on leguminous crops, Mr. J. B. Lawes, the well-known experimenter, says: "Ammonia salts produced very little effect, notwithstanding that a leguminous crop contains two, three, or more times as much nitrogen as a graminaceous one." Again, in using the superphosphate of lime (bone dust), the farmer finds that the best results are obtained from this expensive fertilizer when it is applied to the turnip crop, which contains this mineral in very small quantities, indeed.

In the use of plaster on clover, a heavier dressing than one hundred pounds per acre is rarely employed, and yet this minute amount has been known to double the yield of clover. Does any one suppose that a chemical analysis of the soil on which this crop grew, taking it to the depth of ordinary plowing, could detect this infinitesimal quantity of plaster?

In looking over the results of our own and others' experiments, nothing has surprised us more than the great variation in the yields of small plats, separated by small spaces two or three feet in width. Frequently this variation is as great as one-fourth to one-half of the entire yield. Now, certainly, an analysis of one of these plats would furnish data of very little value for the other.

We do not wish to be disrespectful, but we have no hesitation in saying that the practical farmer who carefully examines the soil and surroundings of a field, gets a better insight into its cropping capacity than could be obtained from the most costly analysis. And, for ourself, we should as soon think of analyzing a quart measure to see how much it would hold, as to analyze soil to see how much it would grow. —*Prof. Shelton.*

Advice for Drinkers.

Barkeepers in this city pay on an average $2 per gallon for whiskey. One gallon contains an average of sixty-five drinks, and at ten cents a drink the poor man pays $6.50 per gallon for his whiskey. In other words, he pays $2 for his whiskey and $4.50 to a man for handing it over the bar. Make your wife your barkeeper. Lend her two dollars to buy a gallon of whiskey for a beginning, and every time you want a drink go to her and pay ten cents for it. By the time you have drank a gallon she will have $6.50, or enough money to refund the $2 borrowed of you, to pay for another gallon of liquor, and have a balance of $2.50. She will be able to conduct future operations on her own capital, and when you become an inebriate, unable to support yourself, shunned and despised by all respectable persons, your wife will have enough money to keep you until you get ready to fill a drunkard's grave.—*Country Gentleman.*

It is not easy to add anything to the irony of the above, and we shall not attempt that feat. It has seemed to us, however, that when a person has once fairly started on the road to *mania a potu*, he ought to stand before the law an insane person, and be adjudged as such. His guardian should be appointed,— his wife, if he has one,— so that not all, husband, wife and property, might come to a common ruin.

ENGLAND is beginning to receive meat from Southern Russia, and a representative of a German house has invaded Sheffield, and is offering scissors and such like goods, serviceable and well-finished articles, at from 15 to 40 per cent below the manufacturers' prices.

THE INDUSTRIALIST.

SATURDAY, FEBRUARY 8, 1879.

A number of items are crowded out this week, for want of room.

Leslie H. Smith, at Pillsbury's shoe store, Manhattan, has a Webster's Unabridged Dictionary, nearly new, which he will sell cheaply.

Burdette's funny lecture will be delivered Tuesday evening instead of Monday, as announced last week. Tickets, 25 cents; for sale at Fox's Book Store.

Parties in the habit of passing through the College farm, on their way to town, will do well to remember that this road will be closed after the middle of next week.

The recent transfers of live stock by the Farm Department are as follows: One Berkshire pig to Allen Wilson, Clay county, Kas.; pair of Essex gilts to G. W. Clark, Topeka, Kas.; one Berkshire to R. W. Knox, Cawker City, Kas.

In response to the requests of their many friends, the parents of the late Henry F. Coe have just had printed, in circular form, a little memorial of him. Copies of the same can be had by applying to Mr. Coe, or calling at this office.

The publisher of one of the most influential dailies in the State, in a recent letter, pays the following compliment to our paper: "The INDUSTRIALIST we regard as one of our most valuable weekly exchanges, and one most highly prized for our 'State News' department."

Rev. H. I. Coe has lately presented the Alpha Beta Society with twenty-five books, the property of his deceased son, who was an active member of the Society. These books are quite an addition to the library of the Society, which now contains one hundred and nine volumes, besides scores of valuable pamphlets and papers, Next week we will publish the names of the books just received. The Society has lately added to its library Green's History of the English People and the Inter-Ocean Curiosity Shop.

Mr. S. M. Curl, of New Zealand, has sent to the Horticultural Department a package of seeds of some of the native trees of that distant island. He has also promised, in a letter to Prof. VanDeman, to send a collection of the woods of that place. It is very fortunate that a correspondence has been begun with this gentleman, as he is devoting all his spare time from professional labors to the dissemination, collection and trial of seeds of timber, fruit and forage plants. Prof. VanDeman sent him some of our native seeds some time ago.

We learn with great pleasure of the appointment of Mr. Wm. Watson, of Junction City, as one of the judges in the live stock department of the great World's Agricultural Show, to be held in London, England, in June next; and also in a similar capacity at the Highland Society's meeting in Perth, Scotland. This is a very great compliment and a deserved one. Mr. Watson is one of the very best judges of stock of all kinds we have ever known; and he is probably the best living authority on the Polled Angus cattle which are now attracting such general attention, his father, the late Hugh Watson, of Keilor, Scotland, having been the originator of the improved Angus breed. We understand that Mr. Watson proposes to purchase and import stock for parties wishing it, on commission; and to such we say, if a superior judge of stock and an upright man are wanted, address Mr. Watson, at Junction City, Kansas.

The attendance of the Alpha Beta Society has, of late, been very large, and yesterday was no exception. Roll-call showed that almost all the members were present. All the selections of the music committee were well received. The debate was well managed, many good points being made on either side. It was finally decided, however, that compulsory education is of advantage to this State.

The *Gleaner*, presented in due form, was fully appreciated. Among other things, the reporter was advised to borrow a little "thunder" from the Webster reporter; but, fearing that too much of that aforesaid article would cause a panic, the advice remains unheeded.

In a few well-chosen words, Mr. Coe presented the Society with twenty-five volumes for the library, which gift was accepted with heartfelt thanks. Two of Mr. Coe's children were Alpha Betas; and, as he and his family leave the place, they carry with them the sympathies and good wishes of every member of the Society.

HOMBRE.

A large and enthusiastic meeting of the Central Kansas Breeders' Association, was held in Prof. Shelton's lecture room yesterday. Well-known breeders from Pottawatomie, Davis and Wabaunsee counties were present. The permanent officers of the Association for the ensuing year were selected as follows:

President, E. M. Shelton, Manhattan.
First Vice-President, C. M. Gifford, Milford.
Second Vice-President, O. W. Bill, Manhattan.
Third Vice-President, Dr. W. T. Vail, Manhattan.
Fourth Vice-President, Wm. Watson, Junction City.
Fifth Vice-President, Major D. W. Crane, Durham Park.
Secretary, A. W. Rollins, Manhattan.
Treasurer, S. A. Sawyer, Manhattan.
Executive Committee—E. M. Shelton, A. W. Rollins, C. E. Allen, O. W. Bill, and W. T. Vail.

The next meeting will be held in the same place on March 1st, at 2:30 P. M. A large attendance is expected, and some interesting communications are promised by parties from abroad.

The exercises at the Webster Society last Saturday evening were the most interesting of any session during the term. It was decided that the introduction of labor-saving machinery had not been beneficial to the laboring classes. At the close of the debate, a recess of ten minutes was held to discuss the feasibility of holding a moot legislature. Nearly all were in favor of it, and under the head of new business a committee of five, consisting of Messrs. Eckman, Salter, Wood, Leach and Morgan, was appointed to draft a programme. All aspirants for fat offices will take notice and commence their wire-pulling accordingly. Mr. Jewell read Mark Twain's humorous sketch of the "Good Boy," in which it was shown pretty conclusively that all good boys fail to attain their majority, and that this boy was not an exception.

A number of new names were proposed for membership, and Messrs. Rust, Gross, Randel and Neiman were initiated. By a unanimous vote, the Society purchased George Sand's "Indiana" and Green's History of the English People. Also, a committee of one was appointed to investigate the merits and demerits of Hill's Manual, with the view of purchasing, if the Society thought proper. The question, "*Resolved*, That education has done more to civilize man than the instinct of man to worship a supreme being," is the subject for discussion at the next meeting. Affirmative, Hulett and Shartell; negative, Wood and Salter. Select reading, J. C. Allen. L.

NATIONALIST ITEMS.

Mr. Fox Winne, of Newton, was visiting his parents in this city, a few days last week.

Students at the College are turning out some fine specimens of their workmanship. We saw an elegant piano stool made by Mr. Everhart.

Our town and county are constantly receiving new accessions; and we regard it as certain that there will be a great deal of building this year.

Thos. W. Pickett has purchased the stone house in the northwest part of town, formerly occupied by Mrs. Jaquith, and will fit it up for a boarding-house.

After the middle of next week, the road through the College farm will be closed. Persons heretofore in the habit of using that road, should bear this fact in mind, and go either north or south of the farm.

According to Levi Woodman, "the young fish deposited in the Big Blue River at Manhattan, by the Commissioner of Fisheries, Hon. D. B. Long, can be seen any day. They are growing fast, and appear to be in a healthy condition."

The regular monthly meeting of the Horticultural Society of Manhattan, will be held at the Horticultural room at the College the second Thursday, 13th of Feb., at two o'clock P. M. Subject for discussion: "Insects Injurious to Vegetation."

Manhattan is undoubtedly becoming the blooded stock center of Kansas. There are more people in this vicinity raising high blood stock than about any other place in Kansas; and buyers from all parts of Kansas and the surrounding States are coming to recognize this fact. It is the most westerly of the anti-herd law counties, and is, in every respect, admirably adapted to stock-raising.

Col. H. G. Barner, who has for many years been a prominent citizen of Manhattan, died last Friday, after a lingering illness. He was born January 21st, 1821, and died January 30th, in his fifty-eighth year. He was Colonel of the Eighth Iowa Cavalry during the war, was a lawyer of ability, and a year or two ago was a member of the Wyoming Legislature. His relatives and friends have the sympathy of our entire community.

On Monday last, at the temperance meeting in the Christian Church, P. W. Peak, a son of Matt Peak, was shot and killed by Charlie Bates. Some of the friends of the deceased think that the act was not only unnecessary but malicious; while the friends of Mr. Bates are divided, some believing that his life was actually in danger, and all that he thought it was.

Both of the young men stood well in the community. Mr. Peak has lived here for years, had a great many friends, and, so far as we know, no enemies. We have often heard him highly spoken of, and never heard a word to his disparagement. Mr. Bates has lived here a shorter time, is a member of the Congregational Church, and was studying medicine under Dr. Roberts. * * *

The reports in relation to how the affair occurred are so numerous and conflicting that it will not be possible to arrive at a correct conclusion until after the preliminary examination, and possibly not until the final trial. * * * * * *

It is hardly necessary to state that the entire community—including Mr. Bates' friends—sympathize with the bereaved relatives, and deeply regret the unfortunate occurrence. It is too early now to call attention to the lesson it teaches, and we only add that Mr. Bates' friends ask for nothing but impartial justice.

The INDUSTRIALIST, the little paper published at the State Agricultural College, still continues to be one of the brightest little exchanges that comes to our table.—*Cowley County Telegram.*

The Manhattan College is, without a doubt, one of the best educational institutions in the State of Kansas. The long list of names printed in the INDUSTRIALIST of January 18th, proves this fact to every reflective mind. Taking everything together, we are safe in saying that the above College has done more for the poor young men and women of Kansas than all of the other educational schools in the State.—*Galena Messenger.*

One hundred and fifty-seven students are now attending the Kansas Agricultural College, with a view of acquiring an education that can be put to a practical use. This remark applies to both sexes. This institution has a well-stocked farm and nursery, and well-equipped shops, for giving boys practice in farm and nursery work, also in wood and iron work. There is also a well-constructed kitchen laboratory, in which the girls are instructed in special hygiene and household chemistry. They are also instructed by practicing the art of cooking, dress-making, printing, telegraphy, carving, engraving and music.—*Grange Bulletin.*

DIRECTIONS TO APPLICANTS.

TERMS OF ADMISSION.

Candidates for admission must be fourteen years of age, and pass a satisfactory examination in reading; arithmetic, through decimal fractions; and English grammar, to syntax. Classes are started at the beginning of each year in Drill in Arithmetic and Drill in English; and the pupil must have the knowledge above indicated, else he will be unable to retain position if admitted.

Pupils will be received at any time during the year, if able to pass an additional examination upon the subjects studied by the classes which they expect to enter. But they will find it greatly to their advantage to be present at the opening of each term, or as soon thereafter as posssble.

GRADES.

Both the Literary and Industrial recitations are graded daily upon a scale of 100; and an examination of all classes is made at the close of each month. A student not attaining an average grade of sixty is promptly dropped to a lower class, or excluded from the Institution until able to do so. The work of grading is strict and uniform in all the departments, and this process is rigorously used for sifting out incompetent and indolent pupils; thus more than accomplishing all that is designed to be effected by a "high standard of admission." Hence, the student's continuance in the College wholly depends upon his own action.

The course is based upon the determination to make the labor required in the preparation of one industrial and three literary recitations as much as the average student can perfectly perform, in ten hours a day. We design to give the pupil the worth of the time expended at College; and, in order thereto, he must do a full day's work with brain or hand. Only those students who can maintain a standing of ninety in each study will be allowed to take more than the prescribed number of recitations; and no one will be permitted to have less than one industrial and three literary recitations.

RELIGIOUS.

Unless otherwise directed by parents, students are required to attend chapel at 8:30 A. M. on academic days, and divine service once every Sabbath.

EXPENSES.

There are no charges whatever for enrollment, attendance or instruction in the regular courses; nor are there any "contingent fees" for the repair of buildings, for the use of books or apparatus, for diplomas, or the kindred privileges usually grouped under the term "contingent." Male students are furnished instruction, the use of apparatus, instruments or tools, in both the literary and industrial classes marked out for them, without any charge. And the same is true of female students in the regular classes provided for them. Printing and Telegraphy are industrials primarily provided for the education of female students, and male students taking either of these are charged $1 per month for use of instruments.

Instrumental music is a fine art or "accomplishment," rather than a mechanical art. We do not place it among our "industrials" in the same sense, or for the same purpose, that we do those provided for teaching the trades. Accordingly, a fee of $12 per term, or seventy-five cents per week is required from female students for tuition and the use of pianos or organs.

The only charge made for material in either the literary or industrial departments is for the chemicals used by students in laboratory practice, which are furnished at wholesale prices, and amount to but a small sum.

Furnishing an absolutely free education is as much as can be reasonably asked; and the Institution neither boards, clothes, nor supplies the student with text-books. Boarding can be obtained in private families at from $2.75 to $4 per week. Washing costs from seventy-five cents to one dollar per dozen. Text-books, which can be procured in Manhattan, cost from $2 to $5 per term.

No student need expend over $5 per week; and many of our best pupils are living at $1.25 per week. Students desiring to "board themselves" can do so at from $1 to $2 per week. In a club of four young men, renting a house, the average cost to each for the term was $1.11 per week.

LABOR.

Manual labor by the students may be for either of two purposes: First, to acquire skill in a given art; second, to earn money. In the first case, the labor is educational; in the second, it should be paid for by the party benefited.

Educational Labor.—Manual labor in the reciations of the Industrial Departments, like mental labor in those of the Literary Departments, is purely educational and will not be remunerated. While the interest of the student will be held paramount in the direction of this labor, the practice necessary to dexterity will be required.

Remunerated Labor.—When the Institution needs labor on the Farm or elsewhere which is not educational, but simply for its own profit, and which a student is able and willing to perform, it becomes an employer instead of a teacher, and he an employe instead of a scholar. It pays for work, he works for pay. The relation between them is commercial, not educational; and both parties must act upon business principles. Hence, the College furnishes only such employment as its own interests require, and will pay according to the value of the service rendered at from seven to ten cents an hour.

AMOUNT EARNED.

It is impossible to predict how much a given person can earn, since that depends upon what he can do and what work there is to be done. Hence, it is wholly impossible for us to answer the question so often asked: "Do you think I can meet my expenses by work?" Some students make one-half their expenses, some the whole, and exceptional men have made more than expenses. As a rule, a faithful boy skilled in farm work can earn half his expenses on the Farm or in the Nursery. During the year he can ordinarily acquire sufficient skill in the wood or iron shops to enable him to make articles for sale. The whole question is one for his own consideration and decision. We can teach all who come, but cannot absolutely *promise* anything more. Hitherto we have refrained from holding out strong inducements respecting the amount of labor we might have to offer; but in view of the fact that during each of the last three years we have had more to do than the students could perform, we are inclined to give greater and positive encouragement on this point. Any boy who is in dead earnest, who is familiar with farm operations, and who can raise $50 to start with, should be able to carry himself through the four years' course. And certainly this places an education within the reach of every determined boy. As yet we are unable to offer similar advantages to girls, not requiring labor in the College departments which they can perform.

RULES.

1. Behave as a true man or woman should, at all times and in all places.

2. Attend to your own business promptly, thoroughly and courteously; and vigorously let alone that of other people.

3. Penalty: "Leave!"

PUBLICATIONS.

The "Hand-Book," published in 1874, containing a full discussion of the educational question and the aims of the Institution, will be forwarded to any one desiring it.

THE INDUSTRIALIST, a weekly journal edited by the Faculty and published by the Printing Department, contains original and seasonable articles on the Farm, Orchard, Trades, Sciences, and Education. Price, 75 cents a year. Address A. A. Stewart, Manhattan.

CALENDAR.

Winter Term 1879.—Begins Friday, January 3d, 1879.

TO NEW STUDENTS.

Bring the text-books you have been using. On arrival, first arrange for your boarding. A. A. Stewart, Sup't Printing Department, will furnish information, either by letter or on application, concerning boarding places or rooms for rent. Report to the President at 8:30 A. M., immediately after chapel, for enrollment.

For further information apply to Jno. A. Anderson, President, Manhattan, Kansas.

LITERARY SOCIETIES.

ALPHA BETA.—Chartered, December 26th, 1870. Meets in College building every Friday at 2 P. M. Ladies admitted. New students cordially invited to attend. W. H. SIKES, President.
MISS MARIA E. SICKLES, Secretary.

WEBSTER.—Chartered, January, 1871. Meets in Telegraph Hall every Saturday evening. Visitors, especially students, always welcome.
H. C. RUSHMORE, President.
J. N. MORROW, Secretary.

RAILROAD TIME-TABLE.

KANSAS PACIFIC RAILWAY.

PASSENGER ARRIVES.

No. 2, going East	11:14 A. M.
No. 4, going East	3:47 A. M.
No. 1, going West	5:10 P. M.
No. 3, going West	4:33 A. M.
No. 7 (freight), going West	8:15 A. M.

Nos. 1 and 2 run daily; Nos. 3 and 7 run daily except Monday; No. 4 runs daily except Sunday. Passengers with tickets are carried on No. 7.
GEO. C. WILDER, Agent.

THE INDUSTRIALIST.

SATURDAY, FEBRUARY 8, 1879.

Students Enrolled Since Jan. 3, 1879.

NAME.	COUNTY.
Adams, Emma L.	Riley.
Abbott, Frank	Riley.
Allen, Albert H.	Nemaha.
Allen, Chester	Mitchell.
Axtell, Frank D.	Pottawatomie.
Axtell, Fred W.	Pottawatomie.
Ayres, Sarah	Shawnee.
Barnes, E. M.	Osage.
Bates, Charles W.	Vermont.
Bayles, Benjamin B.	Riley.
Beacham, Augustine	Marshall.
Blain, Arthur T.	Riley.
Breakbill, John	Riley.
Buchli, Bartholomew	Wabaunsee.
Buell, C. Stewart	Riley.
Buell, Delight A.	Riley.
Call, Charles M.	Shawnee.
Call, Henry L.	Shawnee.
Campbell, Emma	Riley.
Campbell, Ettie A.	Riley.
Campbell, May	Riley.
Chenoweth, Charles C.	Cherokee.
Chenoweth, J. W.	Cherokee.
Clarke, Ezra S.	Riley.
Clarke, Hattie P.	Riley.
Clarke, Mary	Riley.
Coburn, Ella	Saline.
Coleman, Edward P.	Iowa.
Cowell, William J.	Clay.
Cox, George A.	Riley.
Cox, Lizzie R.	Riley.
Cripps, Edward V.	Riley.
Culter, Horace M.	Sedgwick.
Dickson, A. F.	Johnson.
Donaldson, Alvin	Butler.
Donaldson, Flora	Butler.
Donaldson, George	Butler.
Dow, George H.	Riley.
Durkee, Annette	Lyon.
Durkee, Orpheus	Lyon.
Eckman, Wilmer K.	Osborne.
Edmiston, Dora	Illinois.
Everhart, Logan W.	Labette.
Farnsworth, Henry E.	Lincoln.
Favour, William P.	Greenwood.
Flack, John B.	Dickinson.
Foreman, Albert E.	Riley.
Gist, John M.	Riley.
Gist, Joseph T.	Riley.
Glossop, Emma	Riley.
Goin, Edgar L.	New York.
Gordon, George A.	Jackson.
Griffing, William J.	Riley.
Gross, W. E.	Saline.
Hicks, Wm. G.	Cherokee.
Himes, Hattie	Riley.
Hopkins, Harry H.	Butler.
Hotchkiss, Charles S.	New York.
Hoyt, Emma	Riley.
Hulett, C. M.	Johnson.
Humphreys, George	Sumner.
Hunt, Henry L.	Cherokee.
Hunting, Cora M.	Riley.
Hutsell, Sallie	Cherokee.
Jacobs, James H.	Cherokee.
Jaquith, Walter W.	Davis.
Jeffrey, William J.	Riley.
Jeffrey, Fletcher	Riley.
Jewell, Fred	Butler.
Kent, John H.	Riley.
Keyes, George C.	Wabaunsee.
Kingsbury, Eddie L.	Coffey.
Kinsey, Dora	Shawnee.
Knipe, George D.	Riley.
Knostman, Emma	Riley.
Leach, Darwin S.	Mitchell.
Lewis, Issie	Riley.
Lewis, Jno. W.	Riley.
Light, Willis	Neosho.
Limbocker, Clyde	Pottawatomie.
Limbocker, Clarence	Pottawatomie.
Luse, William P.	Missouri.
Lynch, Fred C.	Cherokee.
Lynch, James H.	Cherokee.
Mails, Mattie	Pottawatomie.
Mann, John	Rice.
Mason, Silas C.	Ottawa.
McBratney, William	Nemaha.
McGuire, Katie I.	Johnson.
McNair, Alice E.	Wabaunsee.
McNair, J. L.	Wabaunsee.
McNair, S. E.	Wabaunsee.
Messenger, Charles	Cowley.
Miller, Edgar	Davis.
Millikan, Minnie E.	Johnson.
Mills, Hattie L.	Missouri.
Moore, Thomas R.	Smith.
Morgan, S. M.	Lyon.
Morrow, John N.	Johnson.
Myers, Wirt S.	Allen.
Neiman, Charles	Nemaha.
Nelson, Cassius C.	Illinois.
Nelson, Henry	Ottawa.
Neusbaum, Ada A.	Riley.
Neusbaum, Lincoln H.	Riley.
Noland, Manda	Riley.
Noyes, Amy E.	Wabaunsee.
Noyes, Ida L.	Wabaunsee.
Outt, J. F.	Montgomery.
Paine, Edwin C.	Lyon.
Parker, Grace	Riley.
Peckham, Almira S.	Riley.
Pettit, D. C.	Cherokee.
Platt, Henry A.	Riley.
Platt, Jennie Smith	Wabaunsee.
Randel, Alta	Nemaha.
Randel, Charles F.	Nemaha.
Randel, Henry A.	Nemaha.
Records, C. M.	Chautauqua.
Reed, C. J.	Pottawatomie.
Reeve, Mark A.	Lyon.
Reynolds, Theodore	Riley.
Richards, Bettie	Pottawatomie.
Richardson, Noble A.	Wilson.
Robinson, Joseph N.	Shawnee.
Rose, George E.	Cherokee.
Rose, Wm. N.	Cherokee.
Rushmore. H. C.	Jefferson.
Rust, Charles	Atchison.
Salter, Lewis A.	Montgomery.
Shartell, Cassius M.	Chautauqua.
Short, Burton L.	Cherokee.
Sickels, Maria E.	Missouri.
Sigman, George L.	Chautauqua.
Sikes, Wm. H.	Pottawatomie.
Sloan, John A.	Clay.
Smith, B. B.	Dickinson.
Snow, Cora L.	Riley.
Spooner, Alice G.	Clay.
Stiles, Charles H.	Wabaunsee.
Strong, Grace R.	Riley.
Tarrant, Will S.	Cowley.
Thackrey, Isaac	Riley.
Thackrey, Sarah	Riley.
Thompson, George F.	Cowley.
Ulrich, Cora L.	Riley.
Vaught, Cora	Butler.
Vincent, Ella E.	Riley.
Wahl, Charles A.	Indiana.
Wahl, Fred E.	Indiana.
Wahl, Wm. H.	Indiana.
Walters, Rosette	Davis.
Welch, C. R.	Harvey.
Welch, J. C.	Illinois.
Whaley, Rowena	Riley.
Whaley, Willie E.	Riley.
Whiteside, Wm. A.	Cherokee.
Wilson, Elmer E.	Cherokee.
Wilson, J. E.	Shawnee.
Winder, Ivaloo	Riley.
Wood, Clarence E.	Pottawatomie.
Woods, Albert O.	Sumner.
Woodworth, J. W.	Cherokee.
Wright, Robert H.	Ford.

The New York Tribune.

"The Leading American Newspaper."

For 1879 THE TRIBUNE hopes to continue with increasing success, the work and the methods which through the year now ended have won such popular approval and borne such ample fruit.

A year ago THE TRIBUNE pointed out the danger to the tranquility of the country, to the Treasury, the currency and the National honor, from the alliance then forming between the Solid South and Tammany Hall. It declared that against this danger the old party of freedom, still the party of the churches and the school-houses, was the only bulwark: and in behalf of that party, it renewed the old appeal to the National conscience, and the enlightened self-interest of the tax-payers.

In all this events have justified it. The year has disclosed the danger THE TRIBUNE predicted, and brought the deliverance it promised. It now asks those who think well of what it did in this eventful year to help widen yet further its influence by increasing its circulation for the next. It labored to harmonize the Republican party; to divert Republicans from attacks upon each other to attacks upon the common enemy. It exposed Southern claims. It denounced the Southern suppression of the negro vote. It resisted debasement of the currency. It endeavored to sustain the Treasury in advancing to specie payments. It strove to promote a reform in the Civil Service. It vindicated the legitimacy of the Republican Administration. It crushed assailants by demonstrating the infamous efforts of the Democratic leaders to buy the Presidency they had fairly lost at the polls. For these services a distinguished member of the Administration has declared that the Republican party and the country owe THE TRIBUNE a debt of gratitude so great that, despairing of full payment immediately, they must imitate the Treasury and fund it! Leading Republicans outside of and even opposed to the Administration, are everywhere heartily expressing similar opinions.

THE TRIBUNE now warns the country that, inspiring as the late elections have been, they do not end the danger. The Democrats and the Greenbackers, if united, could have reversed the verdict. They may be united next time. They already have the Solid South to begin with, as well as the evidence of the control their union would give in many of the Western States. To prevent such a union from sweeping the country, we must keep the Republican party in the highest state of discipline and efficiency, and must educate the voters. If friends know any better agency for such political education than THE TRIBUNE, by all means use it; if not, they surely ought to make every effort to push THE TRIBUNE'S circulation.

THE TRIBUNE is now spending more labor and money than ever before to deserve the distinction it has long enjoyed of the largest circulation among the best people. It is the only newspaper in the country maintaining a special telegraphic wire of its own between its office and the National Capital. Its Washington dispatches are much the fullest anywhere published. Its London correspondent, George W. Smalley, is recognized as the foremost in that field, on the American Press. Its other foreign correspondence ranks exceptionally high. Its scientific, religious and literary intelligence is often fuller, and generally more newsy, than that furnished by journals expressly devoted to these specialties. Its critical departments, all conducted by the old heads, remain the acknowledged authorities:

New Books.....GEORGE RIPLEY, LL. D.
Music.....JOHN R. G. HASSARD.
The Drama.....WILLIAM WINTER.
Art.....CLARENCE COOK.

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Remains the great favorite for our substantial country population. A high authority has said of it that "THE WEEKLY TRIBUNE has done more to make good farmers and good citizens than any other single influence that has ever existed in this country." It is now larger than any of its rivals; its new form (sixteen pages, carefully indexed and suitable for binding), has proved exceedingly popular; and its large, clear type, so different from that of most papers of its class, is a special attraction. Its agricultural department, under the special management of an experienced agricultural editor, with a staff of several assistants, and a large corps of special contributors, is more carefully conducted than ever, and it has always been considered the best. Its market reports are the official standard for the Dairymen's Association, and have long been the recognized authority on cattle, grain and general country produce. There are special departments for the young, and for household interests; while poetry, fiction, and the humors of the day, are all abundantly supplied. During the ensuing year there may also be expected, among many other features: (1.) *Some Personal Reminiscences of Early Anti-Slavery Work*, by OLIVER JOHNSON; (2.) *Further Contributions on Southern Agriculture*, by SOLON ROBINSON; (3.) *Occasional Papers on Current Topics*, by Rev. JOHN HALL, D. D.; (4.) *Occasional contributions* by GAIL HAMILTON; and other attractive matter from writers of equal note.

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THE WEEKLY TRIBUNE *is now so arranged as to make* two complete and separate papers *of eight pages each, the first containing the news and politics; the second, the correspondence, fiction, poetry, household departments, etc.* Both sides of the family *can thus enjoy the paper* at the same time. *During the past year readers have found this a specially attractive and convenient feature.*

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For further information, apply to

JNO. A. ANDERSON, President.

THE INDUSTRIALIST

VOL. IV. MANHATTAN, KANSAS, SATURDAY, FEBRUARY 15, 1879. No. 44.

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INDUSTRIAL EDUCATION.

The real value of an education to the student depends upon two things: First, the practical worth of the knowledge taught; and, second, the degree in which he makes it his own. Hence, the ability of any institution to give a practical education depends upon the kind and aim of the knowledge it teaches, and upon the thoroughness of the instruction therein. The State Agricultural College was directly endowed by Congress, and is guided by the State, for the specific purpose of furnishing to the industrial classes of Kansas a "practical" education, that is, "one fit for use." As its name indicates, and as the statistics of the industries of the State require, its chief work must be that of giving a useful and usable education to those who will engage in farming; and, therefore, the Farmer's Course must, from the nature of the case, be its main one.

FARMER'S EDUCATION.

Words and figures are merely instruments with which to record ideas. They are not themselves ideas, nor should they be made the chief end of an education. As a wagon is necessary to haul grain, so are they a necessary part of an education; but as the wagon is not the grain, so they are not the knowledge which the farmer converts into money. Hence, the classics and higher mathematics are not taught. But it will be noticed in the following course that so soon as the pupil acquires working skill in the use of the English language as a tool, and of figures and lines as mathematical tools, those arts and sciences which present knowledge that has a cash value to the farmer are taught as rapidly as their importance and thorough acquisition will permit. Studies numbered (1) and (4) in the second, third and fourth years are the spine of the course, to which the others are as ribs and muscle.

FARMER'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Practical Agriculture (advanced.)		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit'l Economy, Practical Law.		3. Practical Geometry.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. Practical Agricul. (elementary).		4. English Structure.	
5. Agricul. Chemistry, Meteorology.		5. Organic, Analytical Chemistry.		5. Physics.		5. Adv'd Arithmetic, Book-keeping.	
6. Logic.		6. Practical Surveying.		6. Industrial Drawing.		6. U.S. History, Industrial Drawing.	

WOMAN'S EDUCATION.

Nearly one-half of our students are females, and the Woman's Course is prepared expressly for their liberal and practical education. We have no doubt whatever that practical men and women, who understand what it means and what it seeks to do, will fully endorse it.

WOMAN'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Farm Economy, Special Hygiene.		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit'l Economy, Practical Law.		3. Industrial Drawing.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. English Literature.		4. English Structure.	
5. Physical Geography, Meteorology.		5. Organic, Household Chemistry.		5. Physics.		5. Adv'd Arith., Book-keeping.	
6. Logic.		6. Household Economy.		6. Industrial Drawing.		6. U.S. History, Industrial Drawing.	

MECHANIC'S EDUCATION.

Because of the adaptedness of the leading course to the wants of the intelligent mechanic, it has been found practically unnecessary to diverge from the Farmer's Course. Additional studies, specially adapted to the mechanic's use, will be furnished in a Post-Graduate's Course.

Brief History of Agriculture.

[Speech (somewhat abridged) of Hon. H. G. Davis, of West Virginia, in the Senate of the United States, January 14th, 1879.]

* * * * * *

IMPORTANCE OF AGRICULTURE.

It is impossible to measure, or even estimate, the importance of agriculture to a people. It is the foundation upon which civilization and society rest; the basis and source of the permanent wealth of a nation. No people in history have made substantial progress in civilization, the arts and sciences, and have remained long prosperous, if they neglected agriculture. It is the most universal of all arts, the parent of manufactures and commerce, and the basis of all other industries, and without which all others must decay and perish.

In all countries, its rudest beginnings have marked the first steps in the emancipation of the people from barbarism, and their approach to civilization and organized society. This fact is fully established by annually appropriating and expending large sums, and sending agents to induce the savage Indian to adopt farming instead of hunting for a living; and when successful, much has been accomplished, and the Indian is on the high road to become a good and useful citizen.

Adam was the first agriculturist. We read in Genesis: "And the Lord God took the man, and put him into the garden of Eden to dress it and to keep it."

In the earliest times, the Egyptians were devoted to agricultural pursuits; and Egyptian civilization only took form and shape after her people learned to till the soil.

The Israelites were one of the greatest agricultural nations of antiquity: nearly the whole people were engaged in agriculture; it constituted the chief source of their wealth. Nearly every Israelite was a landowner and literally sat "under his own vine and fig tree." Noah was a husbandman. Abraham had flocks. Job, in addition to owning large herds and flocks, had five hundred yoke of oxen, with which he plowed. Isaac was a farmer; and Jacob tended flocks and herds. David was a farmer and also a shepherd.

The Greeks, though possessing a sterile soil, gave great attention to agriculture.

* * * * * *

WHAT AGRICULTURE HAS ACCOMPLISHED.

About the fourteenth century, agriculture revived, and the improvement and elevation of the lower and middle classes began; and, with its advancement, has gradually gone on all over the world.

Agriculture started England on her high road to prosperity and the commercial supremacy which she has maintained in the world for five hundred years.

Through agriculture a large part of Holland was reclaimed from the sea, and it is now the foundation of her great wealth and prosperity.

The people comprising the great German Empire, one of the most powerful of nations and respected all over the world, are largely devoted to agriculture, and are greatly indebted to it for their wealth and power.

It has been the glory of France and the chief occupation of her people for centuries; and through it, though but a few years ago a conquered people and compelled to pay a war indemnity whose figures are staggering, but which was paid in less time than any other nation ever paid so large an amount, to-day her people are proud, rich and prosperous.

It is agriculture that gives greatness to Russia, and enables her to contend for supremacy in European affairs and carry on her great wars.

Belgium and Switzerland, though small, owe their prosperity and importance largely to agriculture.

Indeed, all history attests the fact that where a people have devoted themselves to agriculture they have been uniformly prosperous and progressive, while those nations and the people who have abandoned or even neglected it, have declined.

The majority of all people, in all times and ages of the world, from the humblest to the highest, have engaged in agriculture. Presidents, emperors, kings and nobles have not thought it a condescension to be farmers, but rather an honor and a credit. The greatest names in our history have been those who were practical farmers and devoted to agriculture. We have been from the beginning, and must remain, a nation of farmers.

WHAT WE OWE TO AMERICAN FARMERS.

From the time of the landing at Jamestown and Plymouth Rock, the American farmers have always constituted the advance guard and the largest part of that grand army of progress and liberty which in its triumphant march, in the face of dangers, trials, privations, and the cruelty of the savage, has gradually subdued forests, crossed rivers, and climbed mountains, until civilization, society, churches, schools, and happy homes have been established from ocean to ocean and from the lakes to the Gulf.

The American farmers have laid the foundations of an empire on this continent, destined, largely through their efforts, virtues, industry, courage, and devotion to free government, to surpass in substantial glory, grandeur, wealth, progress and prosperity all the nations of this world and the achievements of all history.

Our liberties were conquered and our Constitution made mainly by farmers; and to them, in any and every great crisis, we must look for the safe-keeping and protection of both.

As a rule, the agricultural classes have always been devoted to liberty, peace, and good order, and the friends of established society and the enemies of disorder, wrong, change, violence, and unjust revolution; they constitute the reserve forces of conservatism in all governments, particularly in ours.

The collection of large populations in commercial centers, by depleting the country, has a dangerous tendency. It is int he cities and these great centers that rings, strikes, frauds, trades unions, centralization and consolidation are born, fostered, and best flourish; while in the agricultural districts, the tendency is in an opposite direction.

EMINENT MEN AND AGRICULTURE.

Washington, called from his farm to command the armies of the Revolution, having gained our liberties and started our government in its grand experiment, against the unanimous entreaties of his countrymen to remain in public life, returned to his farm at Mount Vernon and superintended it until the close of his exemplary and patriotic life, nearly the last act of which was to ride over and inspect his various fields, and give orders concerning the same.

In a letter to Sir John Sinclair, Washington said: "I know of no pursuit in which more real and important service can be rendered to any country, than by improving its agriculture and its breed of useful animals." And in his messages to Congress, he more than once called attention to the great importance of agriculture.

General Jackson, in his fourth annual message to Congress, (December, 1832,) in speaking of agriculture, says: "The wealth and strength of a country are its population, and the best part of that population are the cultivators of the soil. Independent farmers are everywhere the basis of society and the true friends of liberty."

Another great mind has said: "A virtuous and intelligent farmer has attained the highest estate of fallen man."

Mr. Jefferson, when not attending to his public duties, spent most of his time upon his estate at Monticello. He said that agriculture was the highest calling of man, the surest road and safeguard to a nation's prosperity and liberty.

Mr. Webster, perhaps the greatest constitutional lawyer this country ever produced, was fond of agricultural pursuits, and spent all of his leisure time at Marshfield, where his great mind found ample scope and occupation in attending to his farm and stock.

Mr. Clay, that great patriot of the West, who knew no North, South, East or West, spent much of his time at Ashland, and while there devoted his great talent to farming; and when permitted to retire from public life, he returned to his farm.

That able, pure and great man, Silas Wright, when he retired from public life, went direct to his farm and gave his personal attention to its management; and the last work of his pen was to write an agricultural address, which he did not live to deliver. It is a proud distinction to agriculture in our country that it numbers among its advocates and followers such names as Washington, Jefferson, Adams, Madison, Jackson, Webster, Clay and Wright.

Napoleon the First said that agriculture was the body and soul of the empire; and, in the height of his glory, he gave the subject much attention and encouragement, and established in France a department of agriculture.

Dr. Johnson remarks that agriculture not only gives riches to a nation, but the only riches she can call her own.

Prince Albert, a model farmer, said that agriculture was the foundation of the social state.

Gibbon says that agriculture is the foundation of manufactures, since the productions of nature are the materials of art.

THE UNITED STATES AND AGRICULTURE.

The following table presents the number of persons engaged in the different occupations in the United States at the last enumerations:

Population.	*1870 (Census.)*		*1878.*	
	Number.	*Per cent.*	*Number.*	*Per cent.*
Total over 10 years.	28,228,945		34,000,000	
Males in all occupations.	12,505,923		15,000,000	
Agriculture	5,922,471	47.35	7,600,000	50.66
Manufacturing and mining	2,707,421	21.65	2,900,000	19.33
Professional and personal	2,684,793	21.47	3,000,000	20.00
Trade, com'erce and transportation	1,191,238	9.52	1,500,000	10.00

The census of 1870 gives an aggregate value of all personal and real property for that year of $29,822,535,140.

The agricultural interest being valued at 38 per cent of all others combined, the value of farms and farm property is $11,124,959,037.

Value of farm crops, 1870	$9,262,803,861
Value of farm animals, 1870	1,525,276,747
Value of farm implements, 1870	336,879,429
Total	$11,124,659,037

[*Concluded next week.*]

THERE are over thirteen thousand head of sheep in a radius of ten miles on Crooked Creek, above Leroy, and the number is rapidly increasing. Many of them are owned by Germans, and there is not a poor herd among them.—*Burlington Patriot.*

NEVER dispute with a woman or buy drugs from a boy.

THE INDUSTRIALIST.

SATURDAY, FEBRUARY 15, 1879.

E. M. SHELTON, Managing Editor.

ASSOCIATE EDITORS, MEMBERS OF THE FACULTY.

THE College acknowledges the receipt of Nos. 1 and 2, of Vol. 15, of the Official Gazette of the United States Patent Office. By law each Senator and Representative has the privilege of designating eight public libraries to be supplied with the Gazette. The College is indebted to Hon. Wm. A. Phillips for this valuable periodical, and also for many other public documents.

AND now the young ladies in Lasell Seminary, near Boston, are taught millinery, dress-making and cooking, in addition to French, music and painting. This is as it should be; the useful and ornamental ought not to be dissociated. Now, let the young ladies outside of Lasell Seminary, who understand either cooking, millinery or dress-making, add to their attaiments whatever of the ornamental they can.

THE advocates of a complete and comprehensive system of State education, which makes the common school a narrow segment of the immense circle completed by a grand National University, are finding unlooked-for obstacles in the action of courts of justice. Both Wisconsin and Illinois have recorded legal decisions as to the choosing of studies by parents or teachers. The Wisconsin court says: "It is unreasonable to suppose that any scholar who attends school can or will study all the branches taught in them. From the nature of the case, some choice must be made, and some discretion exercised, as to the studies which the different pupils shall pursue. The parent is quite as likely to make a wise and judicious selection as the teacher. At all events, in cases of difference of opinion between the parent and the teacher upon the subject, we see no reason for holding that the views of the teacher must prevail."

No Reports.

In a late number of the *Pottawatomie Chief*, attention is called to the statement contained in Governor St. John's message, to the effect that he had received no reports from the Agricultural College; and certain inferences, not complimentary to the College, are drawn from this omission.

The regular meeting of the Board of Regents, at which the "Regents' report" is made, and when the plans and policy of the ensuing year are shaped, was called for the evening of Jan. 7th; however, on account of the snow embargo, the meeting was considerably delayed. For this reason, we suppose, the reports reached the Capitol somewhat later than usual,—too late to receive the usual notice in the Governor's message. Be this as it may, all the reports have been in type something over a week, and doubtless they will be distributed in a few days at the farthest. The reports of the several departments of the College, for the year ending June 30th, 1878, were placed in the hands of the Superintendent of Public Instruction more than two months ago.

We expect to reproduce all of these reports in this paper within a short time; when the *Chief*, his warriors and papooses—who all read the INDUSTRIALIST—can peruse them at their leisure.—*E. M. S.*

Essex Pigs.

A correspondent writes us to the effect that his neighbors are disposed to look with contempt upon his recent purchase of Essex pigs, asserting that they are not a pure breed, etc.; and he earnestly asks, "Are the Essex a distinct breed?" We should rather think they were. In fact, we know of no breed of swine which has such distinctive characters as the Essex, or transmits them so certainly. The possession of these traits makes a "distinct breed," whatever may have been its origin. The improved Essex, however, is of mixed origin; but no more so than the Berkshires, and very much less so than the Poland China. Indeed, if we except the Devon and Jersey cattle, we know of no breed against which it has not been urged that they have been "crossed" with some other variety; and generally these charges have been pretty well authenticated.

The improved Essex dates its origin at the time—some fifty years ago—when Lord Western united the blood of the Neopolitan swine, imported by him from Italy, with the old Essex breed. This old Essex stock was of large size and coarse frames, with long snouts, short, upright ears, and having the form denominated roached-backed. Their colors were black and white, and they were known as the "Essex Half-Black Pigs."

The improved Essex is a very different animal. He is fine in bone, although coming to good size, with moderate length of face,—never dished as in *pictures* of Berkshires,—great ears, and always black in color. The peculiar conformation of the hind-quarters, which are quite full and high, with the qualities mentioned above, are so characteristic that once seen the form of the Essex pig is not likely soon to be forgotten.

The Essex is a very hardy animal, quiet and docile in disposition; he matures early, and is a wonderfully quick and easy breeder. We are firmly of the opinion that a pound of pork of the best quality can be made from less feed, than any other breed with which we are acquainted. But it must be confessed that the Essex is much less prolific than the Berkshire, and the females easily become barren.

But whatever may be the breed, if pigs as soon as they are weaned are confined in a narrow, filthy pen, without protection, and subjected to a "mixed diet" of corn in the ear, that breed will in all cases prove a "failure."—*E. M. S.*

New England Education.

A recent number of the semi-weekly *Tribune* contains a somewhat remarkable communication, from a Boston correspondent, on New England education. It is asserted that the "reputation of Massachusetts intelligence received a damaging blow on last election day," because "nearly one-half of the adult male population of that State voted for the representative of a hodge-podge of financial and social theories which the slightest exertion of one's reasoning powers proves to be as unsubstantial as the snow men which the boys at this season are accustomed to build in the vacant lots and back-yards." The writer also calls attention to the fact that the voters of Maine were not superior to the following that a "plausible but well-known demagogue collected in Massachusetts." He then asks two pertinent questions: "Are the people of New England degenerating?" "Is education in Massachusetts, and in the other New England States, in a decline?"

We have not space to quote what the Boston man says upon the first question, but we give his description of the modern school in the rural districts of New England. He says: "Any one who has visited the inland towns of New England, especially those a little removed from the railroad, knows that they are lamentably deficient in educational facilities. The inhabitants are not able to provide any better facilities; and what is still worse they have, as a rule, little desire for anything better. The district schools are lacking in everything needful for teaching even the rudiments of anything beyond the simplest branches. The teachers, changed every term, perhaps, are miserably paid; and, as a rule, are incapable of anything beyond the most elementary instruction. As regards methods of teaching calculated to develop the reasoning faculties, they know nothing about them. And yet the wretched instruction of these district primary schools, is all the education ever received by many, perhaps by most, New England children of the present day."

This dismal picture is relieved, in a measure, by the admission that there are a few who spend a term or two in the academy or high school of some neighboring town; but the "stay-at-homes," those who settle round "the paternal cot," are degenerating in intellectual strength, and constitute the uncertain quantity which has figured so largely in recent elections.

The relation of popular education to the politics of the State, is one which certainly deserves the attention of our sociologists and statesmen.—*M. L. Ward.*

Pedigrees.--Bad and Good.

The prevailing low prices of pure-bred stock, and its consequent wide dissemination among our farmers, must be regarded as one of the favorable signs for the future of our agriculture. That this will prove in the end a great blessing to the legitimate breeder, I cannot doubt; but this point I do not care to discuss in this letter.

I desire especially to call the attention of the readers of the *Farmer* to the fact that in connection with this wide diffusion of pure-bred animals, among a class knowing nothing of the technicalities of the business, a system of imposture is being practiced in the matter of pedigrees,—sometimes innocently and sometimes with fraudulent intent; and I wish to offer a few suggestions which may help to prevent this in the future. My attention was first called to this matter some months ago, when half a dozen or more of Short-horn pedigrees were sent me for examination. Of these, one-half were in such shape as to bar them from record in any existing herd-book, being either obviously spurious, or containing breaks in the record which could not be filled. Since then I have received two other similar batches of pedigrees, which were in even worse shape than the lot mentioned above, more than half being fraudulent, or the pedigrees of grades, and consequently ineligible to the herd-books. The result of all this is as follows: One lawsuit, in which the defendant was mulcted to the amount of $38.00 and costs, which must have been heavy; a second suit commenced, and numerous others promised for the near future. Now, in all these suits the defendants are, without doubt, innocent; they having simply given the pedigrees which they received in purchasing the original stock.

In the course of this suit, witnesses testified that a breeding animal without a herd-book record had only one-half the value of an equally good animal of sound pedigree. This being true,—and I think few will dispute its correctness,—the matter of pedigrees is most important; and the question naturally arises, How may the general farmer protect himself from impositions of this kind? In the outset it should be remembered that the fact that an animal has a pedigree of a certain number of crosses, does not prove the animal to be purely bred, nor even a "herd-book" animal; and I might go on and say that the fact that the animal is recorded in the herd-book, does not necessarily prove him to be a pure-bred. I do not wish, however, to go into the ins and outs of fashionable pedigrees, but desire only to call attention to the herd-book standard of pure breeding.

The purchase of an animal for breeding purposes from a mere breeder, or irresponsible party, is always attended with great risk, for reasons that are quite obvious. The best course the farmer can take to protect himself from imposition in purchasing pure-bred stock, is to go directly to a reputable breeder of such stock. Such a breeder *dare* not take advantage of the ignorance of his customers; and besides, the immediate ancestors of the animals to be purchased can usually be inspected, and the whole history of the herd from which selections are to be made can be ascertained.

If, on the other hand, the object is to secure high-bred animals, having a special value on account of fashionable pedigrees, then the purchase ought to be left with some friend who is thoroughly versed in such matters. As a rule, however, the farmer is perfectly safe in sending an order to a reputable breeder. Such a man would scorn to send out an animal which would disgrace the herd and its owner.

The marks of the genuine pedigrees may be briefly stated thus: First, the name of the animal is given; second, the date of calving; third, the name and address of the breeder; fourth, the names and addresses of all parties who had owned the animal, and dates of transfers; fifth, the name and herd-book number of the sire; sixth, the name of the dam and the volume of the herd-book in which she is recorded. All these points are illustrated in the following pedigree:

GRACE YOUNG 4TH.

Calved, May 17th, 1870. Bred by J. M. Brown & Sons, Berlin, Ill. Sold, June 5th, 1872, to Andrew Wilson, Kingsville, Kas.; by him sold, August 20th, 1870, to Kansas State Agricultural College, the present owner. By Tycoon 7339. Dam, Grace Young (Vol. 7, A. H. B.), by imp. Fortunatus 1564, etc, etc.

After the pedigree has been carried out in full, there should be appended to it a certificate of sale and breeding in some such form as this:

"This is to certify that I have this day sold the above-named and described Short-horn cow to John Smith, of Topeka, Kas.

"JOHN ROE."

A pedigree like this carries conviction in its face; and, while the names and numbers might be spurious, yet the imposition could be easily established, and it would not be difficult to make Mr. John Roe above smart for his misdoings.—*E. M. Shelton, in Kansas Farmer.*

THE INDUSTRIALIST.

SATURDAY, FEBRUARY 15, 1879.

Mrs. Anderson and family went up to Junction City on Wednesday. They will return Monday.

Prof. Shelton's child has been dangerously ill this week, but is much better now, we are glad to learn.

The unusual stir in the Farm and Horticultural Departments indicates that they are preparing for spring work.

The biennial reports of the Regents and Faculty have been printed and distributed. We expect to begin the publication of these within two weeks at the farthest.

Darwin S. Leach, Noble A. Richardson, and Clarence E. Wood graded ninety-nine or over in all their studies during January. Forty-six of the students graded ninety-five or over during the same month.

Prof. Gale has greatly added to the appearance of his premises by setting out a row of fine sycamores along the south side. Shade trees are the cheapest and most permanent and valuable improvement that can be made on a place; and in this respect, Manhattan—the "beautiful city"—is most highly favored.

The Webster Society has converted itself into a moot Senate. Darwin S. Leach is Governor; C. M. Hulett, Secretary of State. H. C. Rushmore is President of the Senate; J. N. Morrow, Secretary. If the students or Manhattan young folks desire to see amateur legislators do some good work, they should attend the meeting of the Senate this evening.

The Horticultural Department has this week received, through the kindness of Mr. Silas Wilson, of Atlantic, Iowa, several varieties of apple and pear scions, from the Imperial Gardens, at St. Petersburg, Russia. These varieties are recommended by Dr. Regel, Director of the Imperial Gardens, as the best known in that country. They will be tested here, and will, if valuable, be sent throughout the State.

Rev. H. I. Coe and family returned to their home in St. Louis, Mo., on Thursday last. The family of Mr. Coe has been so long in our midst, and all its members have taken such a deep interest in the work of this College, that all—teachers and students alike—feel that they have parted with old and tried friends. We trust that we may have opportunities in the future to renew this pleasant acquaintance.

There have been many visitors to the College this week. We recall the names of a few: Mr. and Mrs. Mead, late of New York; Mrs. Darius Hungerford, Manhattan; Robert J. Burdette, Burlington, Iowa; Gen. L. F. Ross, Avon, Ill.; Hon. I. T. Goodnow, Rev. Wm. Campbell, George S. Green, and Gen. Casement, Manhattan; Miss Minnie Neal, of Pottawatomie county; Miss Nannie Flack, Enterprise, Kas.; Mr. Underwood, Ottawa, Kas.

The following is a list of the books presented to the Alpha Beta Society last week by Mr. Coe:

Life of Washington; Evidence and Authority of Revelation (Chalmers); The Reformation in Europe; The Evidence of Prophecy; Our Protestant Forefathers; The Clockmaker; Life and Voyages of Columbus (Washington Irving); "Macaria," by author of "Beulah;" The Course of Faith; Some Sketches of Society in Great Britain and Ireland, two volumes; Jesuit Juggling; Wishing and Seeking; The Middle Kingdom, or The Chinese Empire and its Inhabitants, two volumes; Travels in South-Eastern Asia, Volume I; The Country of the Dwarfs; The Taxidermist's Manual; The Missionary Gazetteer; The Young Christian; Sketches of Brazil, two volumes; Hall's Manual of Health, Vols. 10, 11, 12.

The Society's library now numbers one hundred and sixty volumes. It also contains almost complete files of *The Gleaner*, a Society paper which has been published regularly for the last three years.

The high reputation of the Alpha Beta Society was fully maintained yesterday afternoon. Although there was no *Gleaner* this week to interest and amuse, yet the orders of declamation and select reading came as near taking its place as anything possibly could. In extemporaneous speaking, courtship led off, followed closely by marriage and divorce, which in turn were followed by interesting topics too numerous to mention, prominent among which were Chinese immigration, man's happiness, and life.

Two more books, "Bitter Sweet" and Holland's "Seven Oaks," were ordered for the library. Both these books are late works, and will no doubt be a valuable addition to an already interesting collection.

Miss Jennie Platt was elected a member. The question for next week is: "Would the herd law benefit Riley county?" Affirmative, W. J. Cowell and George Rose; negative, Henry Call and Miss Kinsey.

HOMBRE.

During the month of January, the following students reached the first rank, having made an average grade of ninety-five or over in all their studies:

Adams, Emma	Kinsey, Dora
Allen, Chester	Knostman, Emma
Blain, Arthur	Leach, Darwin S.
Buell, C. Stewart	Mason, Silas
Call, Charles M.	McBratney, Wm.
Call, Henry L.	Moore, Thos. R.
Campbell, Emma	Morrow, John N.
Campbell, Ettie	Myers, Wirt S.
Campbell, May	Noyes, Amy E.
Chenoweth, Charles	Noyes, Ida L.
Coburn, Ella	Parker, Grace
Coleman, E. P.	Reed, C. J.
Cox, Lizzie R.	Richardson, Noble A.
Culter, H. M.	Rose, George E.
Dickson, A. F.	Rose, William N.
Durkee, Annette	Salter, Lewis A.
Eckman, Wilmer K.	Shartell, Cassius M.
Everhart, Logan W.	Short, Burton L.
Hulett, C. M. T.	Sickels, Maria L.
Hunting, Cora	Sloan, John A.
Hutsell, Sallie	Smith, B. B.
Jaquith, Walter	Whaley, Rowena
Jeffrey, Fletcher	Wood, Clarence E.

There was an unusually large attendance at the Webster Society last Saturday evening, and the exercises were very interesting. Messrs. Jaquith and Allen were initiated. A number of Alpha Betas, all ladies, made us a very pleasant and unexpected call. The ladies are always welcome, and we hope they will come again. But if they knew the pain they caused by their rapid departure at the close of the exercises, they would not have left so abruptly.

As mentioned in our last report, the debate was upon the comparative value of education and religion toward the civilization of mankind. It was decided that religion had exerted the greater influence. The *Reporter* was presented by Mr. Salter, and gave general satisfaction. Owing to the organization of the Senate, it was decided to drop all exercises except those necessary to the opening and closing of each session. On account of increased duties, Webster "thunder" is at a low ebb just now, or we would present the fine-haired gentleman of the Alpha Betas with a little of that article of which he stands so much in need.

LEACH.

ENTERPRISE ITEMS.

Giles Howard is now clerking in the Grange store.

Miss Kate Hoyt was up from Lawrence the first of the week.

Stingley & Huntress took in nearly four hundred dozen of eggs last Saturday.

From the collection of defunct turkeys and chickens in the Blue river, it appears as if the cholera had been turning itself loose in the poultry yards.

The wild geese flying northward proclaim, in unison with old man Tice, that spring is coming this year, the same as usual. We can heartily welcome the "old gal" to Riley county and parts adjacent.

The meetings at the M. E. Church have been in progress about three weeks and the results are eminently gratifying. We are informed that since Mr. Gill assumed charge, about eighty have joined the church.

Robert Burdette, the "Funny Man," lectured at the Presbyterian Church, Tuesday evening. The house was filled with the wealth, beauty, fashion, brains and curiosity of Manhattan to hear the "Rise and Fall of the Mustache."

The enterprising agent of the Wallace troupe, upon making an advertising visit to the public schools, did not meet with as warm a reception as did his bills. The principal made a burnt offering of the dodgers, and gently invited the cheeky individual to "fold his tent and silently steal away." He stole.

The Manhattan and Blue Valley Poultry and Pet Stock Association hold their first annual exhibition Feb. 22d, 1879, as per advertisement. No doubt there will be a fine display, as all the gentlemen connected with the Association have some of the finest poultry ever brought to Kansas. The people in this vicinity manifest great interest in improved and fancy stock and fowls of all kinds, and Manhattan is consequently becoming quite celebrated in this respect.

NATIONALIST ITEMS.

Ashford Stingley has had a nice fence built around his lots.

Mr. Blood is having an addition built to the rear of the Cottage Hotel.

Col. D. R. Anthony writes that he and his wife will probably attend the old settlers' reunion.

We understand that Mr. Wm. Smith is about to commence work on the steeple to the Presbyterian Church.

Mr. Wm. Whillips, one of our first-class farmers in Pottawatamie county, shipped two cars of corn-fed cattle on Tuesday.

John Drew is erecting a stable on the south half of the Park, which is nearly completed, and will be very convenient for training trotters.

Elder Henry Cogswell, late of California, has accepted a call from the Manhattan Christian Church, as pastor for the coming year. He will enter upon his work immediately.

Henry Hunter, Mr. McKanlass' head clerk, had a piece of glass, one-half inch in length, removed from one of his fingers a few days ago. It had been in the finger since last summer.

In the homicide case, reported last week, arrangements were made to give the bail required, but the boys concluded that they preferred staying in custody of the sheriff until tried, as court sits in a few weeks, and they have no desire to avoid a trial.

Prof. VanDeman delivered a lecture at the Marshall school-house, on Deep Creek, Friday evening, Feb. 7th. Subject: "How to Raise an Orchard." Some valuable hints were given for the planting, trimming and care of trees. As such things are generally neglected in this part of the county, it was much needed and fully appreciated.

One circumstance which should have some influence to induce immigrants to settle in Manhattan or vicinity, is the fact that our churches are out of debt. New settlers have a great many drains on their purses, and, of course, would prefer not to be at once confronted with a subscription paper to build a church or pay off an old debt. The Methodists, Congregationalists, Presbyterians, Episcopalians and Baptists have stone buildings, the Christians a wooden one; and all, except the Methodist, are as large as will be needed for some time to come.

DIRECTIONS TO APPLICANTS.

TERMS OF ADMISSION.

Candidates for admission must be fourteen years of age, and pass a satisfactory examination in reading; arithmetic, through decimal fractions; and English grammar, to syntax. Classes are started at the beginning of each year in Drill in Arithmetic and Drill in English; and the pupil must have the knowledge above indicated, else he will be unable to retain position if admitted.

Pupils will be received at any time during the year, if able to pass an additional examination upon the subjects studied by the classes which they expect to enter. But they will find it greatly to their advantage to be present at the opening of each term, or as soon thereafter as posssble.

GRADES.

Both the Literary and Industrial recitations are graded daily upon a scale of 100; and an examination of all classes is made at the close of each month. A student not attaining an average grade of sixty is promptly dropped to a lower class, or excluded from the Institution until able to do so. The work of grading is strict and uniform in all the departments, and this process is rigorously used for sifting out incompetent and indolent pupils; thus more than accomplishing all that is designed to be effected by a "high standard of admission." Hence, the student's continuance in the College wholly depends upon his own action.

The course is based upon the determination to make the labor required in the preparation of one industrial and three literary recitations as much as the average student can perfectly perform, in ten hours a day. We design to give the pupil the worth of the time expended at College; and, in order thereto, he must do a full day's work with brain or hand. Only those students who can maintain a standing of ninety in each study will be allowed to take more than the prescribed number of recitations; and no one will be permitted to have less than one industrial and three literary recitations.

RELIGIOUS.

Unless otherwise directed by parents, students are required to attend chapel at 8:30 A. M. on academic days, and divine service once every Sabbath.

EXPENSES.

There are no charges whatever for enrollment, attendance or instruction in the regular courses; nor are there any "contingent fees" for the repair of buildings, for the use of books or apparatus, for diplomas, or the kindred privileges usually grouped under the term "contingent." Male students are furnished instruction, the use of apparatus, instruments or tools, in both the literary and industrial classes marked out for them, without any charge. And the same is true of female students in the regular classes provided for them. Printing and Telegraphy are industrials primarily provided for the education of female students, and male students taking either of these are charged $1 per month for use of instruments.

Instrumental music is a fine art or "accomplishment," rather than a mechanical art. We do not place it among our "industrials" in the same sense, or for the same purpose, that we do those provided for teaching the trades. Accordingly, a fee of $12 per term, or seventy-five cents per week is required from female students for tuition and the use of pianos or organs.

The only charge made for material in either the literary or industrial departments is for the chemicals used by students in laboratory practice, which are furnished at wholesale prices, and amount to but a small sum.

Furnishing an absolutely free education is as much as can be reasonably asked; and the Institution neither boards, clothes, nor supplies the student with text-books. Boarding can be obtained in private families at from $2.75 to $4 per week. Washing costs from seventy-five cents to one dollar per dozen. Text-books, which can be procured in Manhattan, cost from $2 to $5 per term.

No student need expend over $5 per week; and many of our best pupils are living at $1.25 per week. Students desiring to "board themselves" can do so at from $1 to $2 per week. In a club of four young men, renting a house, the average cost to each for the term was $1.11 per week.

LABOR.

Manual labor by the students may be for either of two purposes: First, to acquire skill in a given art; second, to earn money. In the first case, the labor is educational; in the second, it should be paid for by the party benefited.

Educational Labor.—Manual labor in the reciations of the Industrial Departments, like mental labor in those of the Literary Departments, is purely educational and will not be remunerated. While the interest of the student will be held paramount in the direction of this labor, the practice necessary to dexterity will be required.

Remunerated Labor.—When the Institution needs labor on the Farm or elsewhere which is not educational, but simply for its own profit, and which a student is able and willing to perform, it becomes an employer instead of a teacher, and he an employe instead of a scholar. It pays for work, he works for pay. The relation between them is commercial, not educational; and both parties must act upon business principles. Hence, the College furnishes only such employment as its own interests require, and will pay according to the value of the service rendered at from seven to ten cents an hour.

AMOUNT EARNED.

It is impossible to predict how much a given person can earn, since that depends upon what he can do and what work there is to be done. Hence, it is wholly impossible for us to answer the question so often asked: "Do you think I can meet my expenses by work?" Some students make one-half their expenses, some the whole, and exceptional men have made more than expenses. As a rule, a faithful boy skilled in farm work can earn half his expenses on the Farm or in the Nursery. During the year he can ordinarily acquire sufficient skill in the wood or iron shops to enable him to make articles for sale. The whole question is one for his own consideration and decision. We can teach all who come, but cannot absolutely *promise* anything more. Hitherto we have refrained from holding out strong inducements respecting the amount of labor we might have to offer; but in view of the fact that during each of the last three years we have had more to do than the students could perform, we are inclined to give greater and positive encouragement on this point. Any boy who is in dead earnest, who is familiar with farm operations, and who can raise $50 to start with, should be able to carry himself through the four years' course. And certainly this places an education within the reach of every determined boy. As yet we are unable to offer similar advantages to girls, not requiring labor in the College departments which they can perform.

RULES.

1. Behave as a true man or woman should, at all times and in all places.

2. Attend to your own business promptly, thoroughly and courteously; and vigorously let alone that of other people.

3. Penalty: "Leave!"

PUBLICATIONS.

The "Hand-Book," published in 1874, containing a full discussion of the educational question and the aims of the Institution, will be forwarded to any one desiring it.

THE INDUSTRIALIST, a weekly journal edited by the Faculty and published by the Printing Department, contains original and seasonable articles on the Farm, Orchard, Trades, Sciences, and Education. Price, 75 cents a year. Address A. A. Stewart, Manhattan.

CALENDAR.

Winter Term 1879.—Begins Friday, January 3d, 1879.

TO NEW STUDENTS.

Bring the text-books you have been using. On arrival, first arrange for your boarding. A. A. Stewart, Sup't Printing Department, will furnish information, either by letter or on application, concerning boarding places or rooms for rent. Report to the President at 8:30 A. M., immediately after chapel, for enrollment.

For further information apply to Jno. A. Anderson, President, Manhattan, Kansas.

LITERARY SOCIETIES.

ALPHA BETA.—Chartered, December 26th, 1870. Meets in College building every Friday at 2 P. M. Ladies admitted. New students cordially invited to attend. W. H. SIKES, President.
MISS MARIA E. SICKLES, Secretary.

WEBSTER.—Chartered, January, 1871. Meets in Telegraph Hall every Saturday evening. Visitors, especially students, always welcome.
H. C. RUSHMORE, President.
J. N. MORROW, Secretary.

RAILROAD TIME-TABLE.

KANSAS PACIFIC RAILWAY.

PASSENGER ARRIVES.

No. 2, going East	11:14 A. M.
No. 4, going East	3:47 A. M.
No. 1, going West	5:10 P. M.
No. 3, going West	4:33 A. M.
No. 7 (freight), going West	8:15 A. M.

Nos. 1 and 2 run daily; Nos. 3 and 7 run daily except Monday; No. 4 runs daily except Sunday. Passengers with tickets are carried on No. 7.

GEO. C. WILDER, Agent.

THE INDUSTRIALIST.

SATURDAY, FEBRUARY 15, 1879.

Students Enrolled Since Jan. 3, 1879.

NAME.	COUNTY.
Adams, Emma L.	Riley.
Abbott, Frank	Riley.
Allen, Albert H.	Nemaha.
Allen, Chester	Mitchell.
Axtell, Frank D.	Pottawatomie.
Axtell, Fred W.	Pottawatomie.
Ayres, Sarah	Shawnee.
Barnes, E. M.	Osage.
Bates, Charles W.	Vermont.
Bayles, Benjamin B.	Riley.
Beacham, Augustine	Marshall.
Blain, Arthur T.	Riley.
Breakbill, John	Riley.
Buchli, Bartholomew	Wabaunsee.
Buell, C. Stewart	Riley.
Buell, Delight A.	Riley.
Call, Charles M.	Shawnee.
Call, Henry L.	Shawnee.
Campbell, Emma	Riley.
Campbell, Ettie A.	Riley.
Campbell, May	Riley.
Chenoweth, Charles C.	Cherokee.
Chenoweth, J. W.	Cherokee.
Clarke, Ezra S.	Riley.
Clarke, Hattie P.	Riley.
Clarke, Mary	Riley.
Coburn, Ella	Saline.
Coleman, Edward P.	Iowa.
Cowell, William J.	Clay.
Cox, George A.	Riley.
Cox, Lizzie R.	Riley.
Cripps, Edward V.	Riley.
Culter, Horace M.	Sedgwick.
Dickson, A. F.	Johnson.
Donaldson, Alvin	Butler.
Donaldson, Flora	Butler.
Donaldson, George	Butler.
Dow, George H.	Riley.
Durkee, Annette	Lyon.
Durkee, Orpheus	Lyon.
Eckman, Wilmer K.	Osborne.
Edmiston, Dora	Illinois.
Everhart, Logan W.	Labette.
Farnsworth, Henry E.	Lincoln.
Favour, William P.	Greenwood.
Flack, John B.	Dickinson.
Foreman, Albert M.	Riley.
Gist, John M.	Riley.
Gist, Joseph T.	Riley.
Glossop, Emma	Riley.
Goin, Edgar L.	New York.
Gordon, George A.	Jackson.
Griffing, William J.	Riley.
Gross, W. E.	Saline.
Hicks, Wm. G.	Cherokee.
Himes, Hattie	Riley.
Hopkins, Harry H.	Butler.
Hotchkiss, Charles S.	New York.
Hoyt, Emma	Riley.
Hulett, C. M.	Johnson.
Humphreys, George	Sumner.
Hunt, Henry L.	Cherokee.
Hunting, Cora M.	Riley.
Hutsell, Sallie	Cherokee.
Jacobs, James H.	Cherokee.
Jaquith, Walter W.	Davis.
Jeffrey, William J.	Riley.
Jeffrey, Fletcher	Riley.
Jewell, Fred	Butler.
Kent, John H.	Riley.
Keyes, George C.	Wabaunsee.
Kingsbury, Eddie L.	Coffey.
Kinsey, Dora	Shawnee.
Knipe, George D.	Riley.
Knostman, Emma	Riley.
Leach, Darwin S.	Mitchell.
Lewis, Issie	Riley.
Lewis, Jno. W.	Riley.
Light, Willis	Neosho.
Limbocker, Clyde	Pottawatomie.
Limbocker, Clarence	Pottawatomie.
Luse, William P.	Missouri.
Lynch, Fred C.	Cherokee.
Lynch, James H.	Cherokee.
Mails, Mattie	Pottawatomie.
Mann, John	Rice.
Mason, Silas C.	Ottawa.
McBratney, William	Nemaha.
McGuire, Katie I.	Johnson.
McNair, Alice E.	Wabaunsee.
McNair, J. L.	Wabaunsee.
McNair, S. E.	Wabaunsee.
Messenger, Charles	Cowley.
Miller, Edgar	Davis.
Millikan, Minnie E.	Johnson.
Mills, Hattie L.	Missouri.
Moore, Thomas R.	Smith.
Morgan, S. M.	Lyon.
Morrow, John N.	Johnson.
Myers, Wirt S.	Allen.
Neiman, Charles	Nemaha.
Nelson, Cassius C.	Illinois.
Nelson, Henry	Ottawa.
Neusbaum, Ada A.	Riley.
Neusbaum, Lincoln H.	Riley.
Noland, Manda	Riley.
Noyes, Amy E.	Wabaunsee.
Noyes, Ida L.	Wabaunsee.
Outt, J. F.	Montgomery.
Paine, Edwin C.	Lyon.
Parker, Grace	Riley.
Peckham, Almira S.	Riley.
Pettit, D. C.	Cherokee.
Platt, Henry A.	Riley.
Platt, Jennie Smith	Wabaunsee.
Randel, Alta	Nemaha.
Randel, Charles F.	Nemaha.
Randel, Henry A.	Nemaha.
Records, C. M.	Chautauqua.
Reed, C. J.	Pottawatomie.
Reeve, Mark A.	Lyon.
Reynolds, Theodore	Riley.
Richards, Bettie	Pottawatomie.
Richardson, Noble A.	Wilson.
Robinson, Joseph N.	Shawnee.
Rose, George E.	Cherokee.
Rose, Wm. N.	Cherokee.
Rushmore. H. C.	Jefferson.
Rust, Charles	Atchison.
Salter, Lewis A.	Montgomery.
Shartell, Cassius M.	Chautauqua.
Short, Burton L.	Cherokee.
Sickels, Maria E.	Missouri.
Sigman, George L.	Chautauqua.
Sikes, Wm. H.	Pottawatomie.
Sloan, John A.	Clay.
Smith, B. B.	Dickinson.
Snow, Cora L.	Riley.
Spooner, Alice G.	Clay.
Stiles, Charles H.	Wabaunsee.
Strong, Grace R.	Riley.
Tarrant, Will S.	Cowley.
Thackrey, Isaac	Riley.
Thackrey, Sarah	Riley.
Thompson, George F.	Cowley.
Ulrich, Cora L.	Riley.
Vaught, Cora	Butler.
Vincent, Ella E.	Riley.
Wahl, Charles A.	Indiana.
Wahl, Fred E.	Indiana.
Wahl, Wm. H.	Indiana.
Walters, Rosette	Davis.
Welch, C. R.	Harvey.
Welch, J. C.	Illinois.
Whaley, Rowena	Riley.
Whaley, Willie E.	Riley.
Whiteside, Wm. A.	Cherokee.
Wilson, Elmer E.	Cherokee.
Wilson, J. E.	Shawnee.
Winder, Ivaloo	Riley.
Wood, Clarence E.	Pottawatomie.
Woods, Albert O.	Sumner.
Woodworth, J. W.	Cherokee.
Wright, Robert H.	Ford.

THE INDUSTRIALIST

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INDUSTRIAL EDUCATION.

The real value of an education to the student depends upon two things: First, the practical worth of the knowledge taught; and, second, the degree in which he makes it his own. Hence, the ability of any institution to give a practical education depends upon the kind and aim of the knowledge it teaches, and upon the thoroughness of the instruction therein. The State Agricultural College was directly endowed by Congress, and is guided by the State, for the specific purpose of furnishing to the industrial classes of Kansas a "practical" education, that is, "one fit for use." As its name indicates, and as the statistics of the industries of the State require, its chief work must be that of giving a useful and usable education to those who will engage in farming; and, therefore, the Farmer's Course must, from the nature of the case, be its main one.

FARMER'S EDUCATION.

Words and figures are merely instruments with which to record ideas. They are not themselves ideas, nor should they be made the chief end of an education. As a wagon is necessary to haul grain, so are they a necessary part of an education; but as the wagon is not the grain, so they are not the knowledge which the farmer converts into money. Hence, the classics and higher mathematics are not taught. But it will be noticed in the following course that so soon as the pupil acquires working skill in the use of the English language as a tool, and of figures and lines as mathematical tools, those arts and sciences which present knowledge that has a cash value to the farmer are taught as rapidly as their importance and thorough acquisition will permit. Studies numbered (1) and (4) in the second, third and fourth years are the spine of the course, to which the others are as ribs and muscle.

FARMER'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Practical Agriculture (advanced.)		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit. Economy, Practical Law.		3. Practical Geometry.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. Practical Agricul. (elementary).		4. English Structure.	
5. Agricul. Chemistry, Meteorology.		5. Organic, Analytical Chemistry.		5. Physics.		5. Adv'd Arithmetic, Book-keeping.	
6. Logic.		6. Practical Surveying.		6. Industrial Drawing.		6. U.S. History, Industrial Drawing.	

WOMAN'S EDUCATION.

Nearly one-half of our students are females, and the Woman's Course is prepared expressly for their liberal and practical education. We have no doubt whatever that practical men and women, who understand what it means and what it seeks to do, will fully endorse it.

WOMAN'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Farm Economy, Special Hygiene.		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit'l Economy, Practical Law.		3. Industrial Drawing.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. English Literature.		4. English Structure.	
5. Phys'c'l Geography, Meteorology.		5. Organic, Household Chemistry.		5. Physics.		5. Adv'd Arith., Book-keeping.	
6. Logic.		6. Household Economy.		6. Industrial Drawing.		6. U.S. History, Industrial Drawing.	

MECHANIC'S EDUCATION.

Because of the adaptedness of the leading course to the wants of the intelligent mechanic, it has been found practically unnecessary to diverge from the Farmer's Course. Additional studies, specially adapted to the mechanic's use, will be furnished in a Post-Graduate's Course.

Brief History of Agriculture.

[Speech (somewhat abridged) of Hon. H. G. Davis, of West Virginia, in the Senate of the United States, January 14th, 1879.]

[*Concluded from last week.*]

In the United States about half, or twenty-three millions, of the people are engaged in agriculture. It is the fundamental business of the country, the leading commercial interest, and the most important home industry. We are a nation of farmers, and because of the vast area of our soil and its great fertility we must remain so. Our agricultural products not only support our people, but pay for what we buy abroad; they furnish our greatest scource of revenue, and to them we are indebted for the balance of trade now being largely in our favor, and that our bonds and other indebtedness held abroad are so rapidly coming home. Ordinarily, upon the results of our crops hinge our prosperity for a given year or period. If the crops are good, business is good; if short, business is dull.

The crops exert a controlling influence upon the moneyed operations of the people at home and abroad. The bankers, manufacturers and merchants, in fact all classes of business men, watch if possible with more interest and concern the growth and gathering of the crops than the farmer who sows and reaps them. Mr. Jefferson declared that one-half of our war debt was paid through the products of agriculture; and it is through them mainly that our new war and other debts have been and must be paid. If the farmers for a given year should only raise enough for their own support, the consequences to other classes would be almost ruinous; and if the crops should absolutely fail for a year, the ruin and the starvation that would follow would be beyond description.

We have rich gold and silver mines, inexhaustible iron, coal, copper and lead mines, great salt and petroleum wells, large forests of timber; but none of these, nor all combined, are equal to agriculture. Not only are the people of the United States interested in American agriculture and dependent upon it for support, for revenue, and for prosperity, but the whole world, because America is the granary of the world.

In the United States a more general and better interest is being awakened in agriculture; its importance is fast becoming better understood and appreciated; the people are beginning to learn and understand that mainly to agriculture, now and in the great future, we must look for our prosperity as a nation. It is not so much discredited and abandoned for the overcrowded professions and cities, for mercantile pursuits, and for clerkships, now as in times past.

The following figures, taken from official sources, will serve to show what agriculture has done and is doing for the country. An official statement of the Treasury Department, dated January 1, 1879, shows that—

The imports for the twelve months ending November 30, 1877, were	$482,292,984
And for the twelve months ending November 30, 1878, were	430,661,998
Decrease of imports	$51,630,986
The exports for the twelve months ending November 30, 1878, were	$739,971,739
And for the twelve months ending November 30, 1877, were	623,016,613
Increase of exports	$116,955,126
The exports for the twelve months ending November 30, 1878, were	$739,971,739
The imports for the same period	430,661,998
Exports over imports	$309,309,741

This is a good showing in round numbers during 1878. We bought $5,000,000 less and sold $116,000,000 more than we did in 1877, and we sold $309,000,000 more than we bought. This is principally owing to agriculture.

The following table, taken from the official report of the Bureau of Statistics, dated September, 1878, speaks well for agriculture:

STATEMENT showing the value and percentage of agricultural products (including products of the forest) exported from the United States for each year from 1850 to 1878.

Year ending June 30th—	*Total domestic exports*	*Total exports of agricultural products*	*Percentage of agricultural products to total domestic exports*
1850	$136,946,912	$123,825,808	90.44
1851	196,689,718	165,828,736	85.69
1852	192,368,984	144,037,465	74.85
1853	213,417,697	176,589,418	82.74
1854	252,047,806	195,258,953	77.48
1855	246,708,553	175,385,328	71.09
1856	310,586,330	248,091,084	79.91
1857	338,985,065	260,139,925	76.75
1858	293,758,279	232,478,953	79.49
1859	335,894,383	258,449,990	76.96
1860	373,189,274	295,081,484	78.61
1861	228,699,486	180,516,442	82.46
1862	213,069,519	160,821,597	75.50
1863	305,884,998	215,273,568	70.36
1864	320,035,199	183,356,276	57.29
1865	323,743,187	207,232,749	64.01
1866	550,684,277	416,157,242	75.58
1867	438,577,312	330,413,246	75.35
1868	454,301,713	319,004,531	70.22
1869	413,961,115	311,756,665	75.32
1870	499,092,143	391,269,605	79.01
1871	562,518,651	397,963,220	70.75
1872	549,219,718	407,141,706	74.13
1873	649,132,563	493,962,697	76.00
1874	693,039,054	550,043,638	79.37
1875	643,094,767	479,893,212	74.63
1876	644,956,406	514,339,866	81.30
1877	676,115,592	517,737,998	76.58
1878	722,811,815	592,475,813	81.98

This statement shows that in 1878 our agricultural products, including forest, were about 82 per cent, and since 1850 they have averaged about 74 per cent of our total exports.

The annual production and value of cereals for the ten years ending 1877 are given in the following table from official sources:

TOTAL cereal products of the United States.

Year.	*Total production.*	*Total area.*	*Total value of crop.*
	Bushels.	*Acreage.*	
1868	1,450,789,000	66,715,926	$1,110,500,583
1869	1,491,412,100	69,457,762	1,101,884,188
1870	1,629,027,600	69,251,016	997,423,018
1871	1,528,776,100	65,061,951	911,845,441
1872	1,664,331,600	68,280,197	874,594,459
1873	1,538,892,891	74,112,137	919,217,273
1874	1,454,180,200	80,051,289	1,015,530,570
1875	2,032,235,300	86,863,178	1,030,277,099
1876	1,962,821,600	93,920,619	935,008,844
1877	2,178,934,646	93,150,288	1,035,570,478
Total	16,931,401,037	766,867,363	$9,931,851,953
Average	1,693,140,103	76,686,736	$993,185,195

This table shows the average bushels and value per annum for ten years, 1868 to 1878, as follows:

Products.	*Bushels.*	*Value.*
Corn	1,068,959,550	$525,211,602
Wheat	273,583,174	301,481,541
Rye	18,016,030	15,091,207
Oats	291,036,670	116,810,592
Barley	30,606,609	25,385,450
Buckwheat	10,938,070	9,204,801

These figures are of great importance and value, and show the enormous amount, in bushels and dollars, of one branch of agriculture.

* * * * * * *

For the year 1878, our exports from agriculture alone reached the enormous sum of	$536,038,951
While our entire exports from all other sources, including agriculture, for 1878, amount to	695,749,930
Total exports, less agriculture	$159,710,979

This shows that agriculture furnished full three-fourths of our entire exports, and amounted to more in dollars than our imports.

These statements establish the fact that as in the past we have mainly depended upon agriculture, so in the future we must look to it for our support and ability to pay for what we purchase abroad, as also the payment of our foreign debt and interest.

COTTON.

The soil of some of our States is so well adapted to the growing of cotton that we are the chief producer of the world, and must remain so. It constitutes the largest factor in our exports, bringing us since 1865 an average of more than $200,000,000 per annum, or more than two and a half billions for the thirteen years—which is more than our national debt. Without cotton our foreign trade would have been largely against us. There are good reasons to believe the production will increase from year to year. This large amount is part of the aid and contribution the Southern States bring to us in restoring prosperity to the whole country.

BREAD-STUFFS, INCLUDING ALL CEREALS,

constitute the next largest item in our exports, yielding last year $181,777,841, and an average since 1865 of near $100,000,000 per annum.

ANIMAL PRODUCTS, INCLUDING CATTLE AND HOGS,

rank next in exports, and amounted last year to $133,232,575, an average for the last decade of about $80,000,000 per annum. For this and bread stuffs we are chiefly indebted to the West.

BUTTER AND CHEESE.

This is an important farming and agricultural interest which has not hitherto attracted the attention it deserves, and one that is fast growing in our country. It is estimated that last year the total production of cheese was 350,000,000 pounds, and of butter 1,500,000,000 pounds; estimated value of both being about $350,000,000. This is the contribution of the whole country, and is the leading agricultural interest next to corn, being only one-fourth less in value, one-third more than cotton, and one-seventh more than the hay crop. The exports for 1878 were: cheese, $14,103,529; butter, $3,931,822.

The number of cows in the United States is estimated at about 12,500,000—over six times the number in Great Britain, and twice the number in France.

* * * * * * * *

The following table gives some of the principal items, showing the increase of exports of 1878 over the year 1877:

Increase in horned cattle	$ 2,303,708
Increase in barley	1,857,000
Increase in corn	6,409,000
Increase in wheat and flour	53,164,000
Increase in cotton	8,381,000
Increase in bacon	2,237,000
Increase in cheese	1,402,000
Increase in lard	4,451,000
Increase in preserved meats	1,160,000

These tables speak volumes for agriculture, and show a great increase in the last few years.

POPULATION.

France, with an erea of 201,000 square miles, has a population of about 36,000,000, or 182 persons to the square mile. At the last census, Texas, with an erea of 274,000 square miles, had a population of less than 1,000,000, or about 4 people to the square mile, while her soil and climate is equal, if not better, than that of France or any other country.

Belgium, with an area of 11,373 square miles, has a population of 5,336,634, or about 469 people to the square mile, while we have a dozen States with a larger area,

[*Concluded on fourth page.*]

THE INDUSTRIALIST.

SATURDAY, FEBRUARY 22, 1879.

E. M. SHELTON, Managing Editor.

ASSOCIATE EDITORS, MEMBERS OF THE FACULTY.

SINCE the death of William Cullen Bryant, the Hon. Peter Cooper has been regarded as the patriarchal citizen of New York. On his eighty-eighth birthday, the University of the State of New York conferred on the venerable man the degree of Doctor of Laws. This is a just tribute to the founder of that grand institution, in the metropolis of our country, where laboring people can find instruction in the sciences and the arts.

THE recent organization of two strong stock breeders' associations in this vicinity speaks well for the farming interest. We suggest to the gentlemen of these societies, that, next to "good blood," printer's ink is the most valuable commodity to the breeder. Each of these associations should have a printed catalogue of the pedigrees of their stock; the pedigree of each animal having the name of its owner attached. Then, by advertising as societies, and by referring all correspondence and selections of stock to an Impartial committee, every member will enjoy an equal advantage with every other, and at the very lowest cost. Moreover, intending purchasers would feel a confidence in such an association that the breeder without reputation could not inspire.

Education in Switzerland. No. I.

It is with pleasure that I comply with the wishes of several friends of the INDUSTRIALIST, to give an outline of the educational system and institutions of Switzerland; regretting only that many interesting statistics which should be interwoven in a sketch of this kind are not at my command.

In many respects, our little sister republic is a kind of a kaleidoscope, small as it is. Of the population, about 600,000 are of French, 150,000 of Italian, 40,000 Roman, and nearly two millions of German, nationality. In regard to religious belief, we find a similar display: one county is Protestant, the next one Catholic. This is true at least of the northern parts of the country; the central districts are more largely Catholic. Politically, it is divided into twenty-two sovereign and only loosely-connected States, called cantons, each of which manages its internal policy after its own peculiar views. The natural features of the country also differ very much. The northern cantons are a table-land, little more broken than eastern Kansas, except in the Jura regions; while the inner cantons are a world of gigantic mountain chains, snowy peaks, tremendous gorges, and icy glaciers.

For these reasons, we cannot speak of a distinct system of education in Switzerland. Each canton has its own; and while some stand proudly at the head of civilization, others are at the very foot. Among the former we find Geneva, Neuchatel, Bern, Solothurn, Basel, Argau, Thurgau, and, overshadowing them all, Zurich. With a population of less than 270,000, this last-named canton expends yearly two millions of francs for its educational institutions,—as much as the whole kingdom of Bavaria, with a population eighteen times greater. Among the later cantons must be enrolled those clustering around the central Alps; as, Uri, Wallis, Tessin and Unterwalden.

Other causes than the general poverty of the Alpine regions and the difficulty of intercommunication only, have brought about these results. While Zurich and Geneva opened their doors, during the never-ceasing religious struggles of the past, to fugitives, receiving thereby some of the clearest heads of many a French, German and Italian city, Uri and Schwyz have driven away many of that very class themselves. Subsequently the inner cantons fell into the hands of the Jesuit order, and are not entirely free from that evil to-day; though thoroughly beaten in their attempt to rebel against the expulsion act of the fathers in Jesu, passed by the national congress in 1847. It is only a few years ago that author Rheinecker was publicly whipped, by order of the authorities of Altdorf in Uri, for publishing a pamphlet of "broad-gauge" views on the New Testament. The Berliner *Wespen* fittingly asked at that time, with Schiller, the bard of Tell: "Am I inUri, the land of the free?"

As there is little to be gleaned from poor institutions, I shall turn again to those of the northern districts, that better merit our special attention. The annals of pedagogism preserve the name of many a distinguished Swiss. Pestalozzi, Fellenberg, Vehrli, Tschoke, Ruegg, Roth and Tschudi will never be forgotten. Rousseau wrote his "Emil" here. Switzerland printed the first English version of the Bible, and it was the cradle of the first agricultural college. Few countries have a better railroad system than Switzerland; none, a better postal system; and its telegraph system stands alone at the head of the civilized countries. It has as many telegraph offices as the whole kingdom of Prussia, and sends twice as many dispatches per capita as any other country on the globe.

The first impulse to primary education in Switzerland was given by the French Revolution. Although a black chapter in history, it was a powerful lever for those ideas that are typified by Washington and Lincoln on our side of the Atlantic. For Switzerland, it was a struggle with most beneficial results. It stirred up the people. It taught men to reason and to feel that they were all alike, an idea which previously had been regarded as a crime. In Switzerland, it powerfully shook the old aristocratic oligarchies; and when, in 1832, they were finally overthrown, the development of primary education commenced at once on a grand scale. Since then, each year has witnessed a further progress, until the educational operations of the several governments have become their most weighty and important duties.

Throughout all the cantons, except some of the central ones, education is compulsory. All parents are required by law to send their children to school from the seventh to the sixteenth year. The punishment for neglect of this law is severe, and promptly administered. If pupils absent themselves from school, the teacher notifies the parents of the fact; and, if the absences run over three half-days in a month, the teacher causes the guardian's arrest. The justice of the peace investigates the case, and, unless good reasons are given,—work is never accepted as a reason in any case,—the guardian promenades to jail, where he is kept until the pupil appears again. These regulations are most rigidly enforced, and I could hardly think of an improvement on them. Those who have visited Bern, the capital, have perhaps seen a gorgeous fountain in the market-place with a peculiar group of statuettes ornamenting it. It is the "Kindlifresserbrunnen." The group shows an ugly old sort of an Ahas Verus, with a large bag on his shoulders full of children. Greedily, like a wolf, does he devour one after another. Odd as he looks, he represents the Swiss schools, which take in all.

—*J. D. Walters.*

The Proposed English Alphabet.

Editor Industrialist:—Will you allow me, in a brief way, to explain, through your columns, the proposed change in the English language, intended to do away with the labor of learning to spell; a labor which occupies so much of the school time of our children, and which is, in fact, during the natural lives of all of us, a subject of vexation and disgust.

The trouble about our learning to spell comes from the fact that, strange as it may seem to the uninformed, the English language has no alphabet of its own. It never had a letter that was devised for its own use. For nearly two thousand years it has been wearing the second-hand clothing of the languages of other nations, and that without any remodeling to make it fit the peculiarities of the English tongue. When the Greeks adopted the Phœnician alphabet, they enlarged and adapted it to the needs of their refined pronunciation; when the Romans took the Greek alphabet, to represent the Latin language, they also modified it somewhat; and the French, German and other nations, have pursued the same sensible course. But our forefathers, the uncultivated Britons of England, were not competent to render such valuable service when the Anglo-Saxon armies took possession of their island, and introduced their alphabet and language among them. The shapes of the letters have been slightly modified by the type-makers since the invention of printing, and the sounds of a few letters changed; but no analytical and systematic arrangement and enlargement of the alphabet, to meet the needs of our language, has been earnestly attempted until recent years. But the steady progress of the human mind, in developing better ways and means for accomplishing life's duties, has at last reached written and printed language, and is seeking to apply the plummet and line of philosophy to its proper use.

The most successful effort of this kind is that started by Isaac Pitman, A. J. Ellis, and many scholars of England, in 1843, which has been received with much favor by teachers and literary men, in this country as well as in the old. It is based on the fact, recognized in our pronouncing dictionaries, that there are forty-three elementary sounds heard in English speech, each of which must be represented in some way. The natural and philosophical way would be to represent each sound by a separate and distinct letter; but this of course could not be done with twenty-six letters, hence the alphabet had to be enlarged, as well as re-arranged, so as to give to each letter its most appropriate sound.

I am enabled to give you the new alphabet as employed in the *Phonetic Educator*, a monthly periodical devoted to the "spelling reform," published in Cincinnati. Following the alphabet is a specimen of the new mode of spelling, in accordance with the scientific, or phonetic, theory of representing spoken words. It may be read with as much pleasure, I think, as the following sample of correct English orthography, in vogue only three hundred years ago:

"The duties of farmers' wives, in olden time, are set forth in a treatise entitled, 'The Wyve's Occupation,' by Sir A. Fitzherbert, who, in the days of the polygamous Eighth Henry, says: 'It is a wyve's occupation to winnow all maner of cornes, to make malte, wash and wrynge, to make heye, shere corn, and in time of nede, to help her husband to fill the muck wayne, or dounge cart, dryve the ploughe, to lode heye, corne and such other, and to go and ryde to the market to sell butter, shese, mylke, egges, chekyns, capons, hennes, pygges, gese, and all maner of cornes,'"

F. G. ADAMS.

Topeka, Feb. 14th, 1879.

American Phonetic Alphabet.

Each letter has the sound of the *italicised* letter or letters in the illustrative words.

Vowels.			Explodents.		
Letter.	*Sound.*	*Name.*	*Letter.*	*Sound.*	*Name.*
Ɑ	ɑ as in *arm*	ɑ	P	p . . *pole*	pō
Ɑ	ɑ . . *ask*	ɑ	B	b . . *bowl*	bō
Ą	ą . . . *air*	ą	T	t . . . *toe*	tō
A	a . . . *at*	a	D	d . . . *doe*	dō
Ą	ą . . . *ale*	ą	Ȼ	ȼ . . *cheer*	ȼa
Ɛ	ɛ . . *earn*	ɛ	J	j . . *jeer*	ja
E	e . . . *ell*	e	K	k . . *king*	ka
Ɩ	ɪ̄ . . *field*	ɪ̄	G	g . . *game*	ga
I	i . . . *fill*	i	Continuants.		
Ɵ	ɵ . . . .*or*	ɵ	F	f . . .*fear*	ef
O	o . . . *odd*	o	V	v . . *veer*	vō
Ꙍ	ꙍ . . *oak*	ꙍ	Ƀ	ƀ . . *thigh*	iƀ
U	u . . . *up*	u	Ƌ	ƌ . . . *thy*	ƌa
Ш	ш . . *true*	ш	S	s . . *seal*	es
Ш	ш . . *full*	ш	Z	z . . *zeal*	za
Diphthongs.			Σ	ʃ . . *shall*	iʃ
Ɨ	ɨ . . . *ice*	ɨ	Ʒ	ʒ . vision	ʒa
Ơ	ơ . . . *oil*	ơ	Liquids.		
Ȣ	ȣ . . . *owl*	ȣ	R	r . . *rare*	ur
Ц	ц . . *mule*	ц	L	l . . . *lull*	el
Semi-Vowels.			Nasals.		
Y	y . . . *yea*	ya	M	m . . *maim*	em
W	w . . *way*	wa	N	n . . *none*	en
Breathing.			Ŋ	ŋ . . *sing*	iŋ
H	h . . . *hay*	ha		ṅ (*Fr.*) nearly	ŋ

ƋƐ TШ GLɑSEZ.

Ƌɑr sat tш glɑsez fild tш ƌɛ brim,
On ɑ riȥ man'z tɑbl, rim tш rim;
Wun woz rudi, and red az blud,
And wun az klīr az ƌɛ kristal flud.

Sed ƌɛ glɑs ov wɨn tш ƌɛ pɑler bruƌer:
"Let us tel ƌɛ tal ov ƌɛ pɑst tш ɪ̄ȥ uƌer.
Ƒ kan tel ov baŋkwet and revel and
mɛrƫ, [ɛrƫ
And ƌɛ prɔdest and grandest sꙍlz on
Fel under mɨ tuȥ as ƌꙍ struk bɨ blɨt,
Hwɑr ɨ woz kiŋ, fɔr ɨ ruild in mɨt;
From ƌɛ hedz ov kiŋz ɨ hav tɔrn ƌɛ
krɔn, [dɔn;
From ƌɛ hɨts ov fam ɨ hav hurld men
Ƒ hav blɑsted meni an onord nam;
Ƒ hav taken vɛrtų and given ʃam;
Ƒ hav temted ƌɛ yuƫ wiƌ ɑ sip, ɑ tast
Ƌat haz mad hiz fųtųr ɑ baren wast.
Grater, fɑr grater ƌan kiŋ am ɨ,
Ɵr ƌan eni ɑrmi bīnīƌ ƌɛ skɨ.
Ƒ hav mad ƌɛ ɑrm ov ƌɛ drɨver fal,
And sent ƌɛ tran from ƌɛ ɨurn ral;
Ƒ hav mad gud ʃips gꙍ dɔn at sō,
And ƌɛ ʃrīks ov ƌɛ lost wɛr swīt tш mō,
Fɔr ƌa sed, 'Bīhꙍld hɔ grat yш bō!
Fam, streŋƫ, welƫ, jīnyus bīfɔr yш fel,
Fɔr yur mɨt and pɔ·r ɑr ꙍver ɵl.'
Hꙍ! hꙍ! pal bruƌer," lɑft ƌɛ wɨn,
"ʔKan yш bost dīdz az grat az mɨn."

Sed ƌɛ wɵter glɑs: "Ƒ kan not bost
Ov ɑ kiŋ dītrond ɵr ɑ murderd hɔst,
But ɨ kan tel ov ɑ hɑrt wuns sad,
Bɨ mɨ kristal drops, mad lɨt and glad;
Ov ƌɛrsts ɨ'v kwenȥt, ov brɔz ɨ'v lɑvd,
Ov handz ɨ hav kuild and sꙍlz ɨ hav
savd; [ten,
Ƒ havdīpt ƫrш ƌɛ vali, daʃt dɔn ƌɛ mɔn-
lɔd in ƌɛ river and plad in ƌɛ fɔnten,
Slept in ƌɛ sunʃɨn and dropt from ƌɛ
skɨ, [and ɨ.
And everihwɑr gladnd ƌɛ landskap
Ƒ hav īzd ƌɛ hot fɛrhed ov fīver and
pan; [wiƌ gran;
Ƒ hav mad ƌɛ pɑrȥt medꙍz grꙍ fertil
Ƒ kan tel ov ƌɛ pɔ·rful hwīl ov ƌɛ mil,
Ƌat grɔnd ɔt ƌɛ flɔr and turnd at mɨ
wil.
Ƒ kan tel ov ƌɛ manhuid dībast bɨ yш,
Ƌat ɨ hav lifted and krɔnd anų.
Ƒ ȣīr, ɨ help, ɨ streŋƫen and ɑd;
Ƒ gladn ƌɛ hɑrt ov man and mad:
Ƒ set ƌɛ ȣand wɨn-kaptiv frī:
And ol ɑr beter fɔr nꙍiŋ mī."

Ƌīz ɑr ƌɛ talz ƌa tꙍld īȥ uƌer,
Ƌɛ glɑs ov wɨn and ƌɛ pɑler bruƌer,
Az ƌa sat tugeƌer fild tш ƌɛ brim,
On ƌɛ riȥ man'z tɑbl, rim tш rim.

IOWA'S yield of corn for 1878 is estimated at 250,000,000 of bushels.

THE total endowment of the public schools of the United States is about $8,000,000, and the average daily attendance is estimated at 4,500,000.

THE INDUSTRIALIST.

SATURDAY, FEBRUARY 22, 1879.

A class of seven advanced students in Industrial Drawing took up the study of mechanical projection this week.

Many persons have visited the College this week. Among them were several members of the Legislature.

Prof. Platt's class in Advanced Arithmetic took up book-keeping this week. This class numbers eighty-one, and because of its size has been divided.

Judge Brewer lectures in the Congregational Church next Thursday evening. Subject: "A Woman in Court." Admission, 25 cents; students, 15 cents.

The weather has been unusually mild this week. Spring is returning; and, in view of the severe winter through which we have passed, she is a welcome guest.

The Farm Department acknowledges the receipt of a large package of California Golden Yellow corn—a sort which is highly commended—from J. T. Wright, Mt. Pulaski, Ill.

There was a fine display of the Northern Lights on Tuesday night. Notwithstanding the dense fog, streams of light could be seen shooting up twenty-five degrees or more.

The demand for the College Berkshires has been very great of late, and we have to report the sale of the last of our gilts of this sort. A few good boars, five to seven months old, are offered for sale.

The other day, during a romp with some of the boys, Gus Platt had the misfortune to have his left collar-bone broken. The injury is not a very serious one, but will deprive him of the use of his arm for some weeks.

The students are to have an entertainment and social this evening, in the College Chapel, in honor of Washington's birthday. A good programme has been prepared, and a rich treat is in store for those who attend.

The next meeting of the Central Kansas Breeding Association will be held in Prof. Shelton's room on Saturday, March 1st. A paper on the early history of Short-horns, and related subjects, will be presented by Mr. Watson, of Junction City.

The class in Organic Chemistry has finished the course of lectures and passed the final examination. The young men of the class will begin work in Chemical Analysis on Monday, and the ladies will be given a course of lectures on the more immediate application of chemistry to the household.

The renowned Hutchinson family will give one of their excellent entertainments in the Presbyterian Church, next Wednesday evening, beginning at eight o'clock. The "oldest inhabitant" can testify to the musical genius of this family. They have traveled in Europe and America for over thirty-six years, and have given more than 11,000 concerts.

If harder work, better work, or more of it, has ever been done by the Faculty and students of this Institution, we are not cognizant of the fact. "From early dawn till dewy eve," and from thence on most anywhere into the night, it has been business so earnestly followed that meal-times have come to be interruptions. We have noticed signs of collar-marks, but no sign of flinching in any one.

In another place, we print the speech (slightly abridged) of Senator Davis, of West Virginia, entitled a "Brief History of Agriculture." Coming, as this does, from a body not remarkable for its tendency to "slop over" on agricultural subjects, this address has attracted very wide attention; but not so much on this account as for the forcible manner in which it shows the relation of agriculture to the other productive industries of the nation. Senator Davis has succeeded in making the driest statistics curiously interesting. For example, who supposed that the United States imported during the last fiscal year over six million dozens of eggs, costing over $726,000?

The class in Practical Horticulture, which now numbers twenty-eight, has just finished several days' practice in the art of root grafting. Some time ago Prof. VanDeman had each member of the class select and cut a bundle of scions in the orchard; and now each has grafted his or her own scions on roots in the grafting-room. Each individual has been taught to tie his or her bundle of grafts with a willow with, and labeled it with the name of the variety and the grafter. The bundles are packed in damp sawdust in the cellar, and when spring comes each one will set his or her own grafts in the nursery row. Next summer's growth will prove whose grafting is good and whose is poor. A record of each will be kept.

Yesterday aftenoon, before the meeting of the Alpha Beta Society, many of the members and some others organized themselves into a drill club, which was conducted with little order and less law. However, those in charge hope to have it perfected by next Friday, so that those who desire may have an abundant practice in parliamentary law.

During debate the affirmative was able represented by Messrs. Cowell and Rose, who seemed to thoroughly understand the practical workings of the herd law, both having tested it. The speakers on the negative, Mr. Call and Miss Kinsey, although laboring under the embarrassment of being unacquainted with the county, made a good argument. Decision rendered in favor of the affirmative.

As usual, the *Gleaner* was full of both amusing and instructive matter, and we doubt not that many were benefited by hearing it read. To those who heard it, we would say come and hear the next one; and to those who did not hear it, we say come in two weeks and hear what can be done at our Society.

To the indomitable reporter of the Websters, we would speak plainly, and say that if we valued thunder so highly as he seems to, we would have manufactured some long ago. HOMBRE.

The Webster Legislature held its first session on last Saturday evening. Petitions, resolutions and bills poured in by the dozen, and were referred to the proper committees. A petition, signed by hundreds of voters, was presented, asking for relief from the exorbitant salaries paid to county officials. Bills of all kinds, from the improvement of the Kansas and Arkansas Rivers, the founding of another agricultural college, down to bills relating to marriage and divorce, were introduced. All bills were considered as having reached their second reading, and will receive the third reading and be debated at the next meeting.

Under miscellaneous business, the Legislature proceeded to the election of a U. S. Senator. The Sergeant-at-arms notified the House that the Senate was ready to proceed to the election of U. S. Senator; and, as the room occupied by the Senate was the larger of the two, the House was requested to meet them in the Senate room. There were quite a number of candidates; and, as it often happens in such cases, considerable money is supposed to have changed hands. No choice was made, and of course the subject will come up again next session. There is no doubt but what the Senate will appoint the usual investigating committees, which will be instructed to nose around awhile for fraud. As the bills introduced at the last session will be debated at the next meeting, a lively time is expected, and a cordial invitation is extended to visitors to come and witness the proceedings. LEACH.

The INDUSTRIALIST has been conducted with rare good taste and ability. Prof. Shelton will doubtless maintain the high character it has attained. Few exchanges are more instructive or welcome.—*Clay Center Localist.*

Hon. John A. Anderson is succeeded by Prof. E. M. Shelton in the editorial chair of the INDUSTRIALIST. Anderson wields a vigorous pen, and we hope some day to see him at the helm of a leading Kansas newspaper.—*Abilene Gazette.*

NATIONALIST ITEMS.

Rev. A. J. White arrived in town a few days ago.

Emigrant wagons are beginning to pour out West, singly and by dozens.

On Saturday last E. B. Purcell took in over seven hundred dozens of eggs.

The new railroad bridge is to be of the same make as the other iron bridge across the Blue.

Dr. Perry has rented his house, we understand, and will soon move on to his farm on Pleasant Run.

Mr. Mansfield sold to Maj. Adams nineteen head of grades, coming four years old, that averaged over 1,600 pounds.

A few days ago Wm. Hill put a grade cow on the scales that weighed 1,655 lbs. When butchered she brought in a little over $50.

Kearns and Wilber shipped three cars of stock Monday. Nine cars more were shipped Wednesday by Adams and Higinbotham.

The *Kansas Farmer*, in its new dress, is really a very fine-looking paper, and ought to be in the hands of every farmer in the State.

We understand W. B. Leicester and J. Q. A. Sheldon have formed a copartnership, and will soon have on hand a large stock of clothing.

Hon. E. B. Reynolds, whose temperance lectures did so much good last spring, has agreed to lecture twice in this place sometime near the middle of March.

Our new town-clock is doing excellent service and is keeping so nearly correct time that the fortunate possessors of brag watches are setting their time-pieces by it three or four times a day.

Francis Murphy, the great temperance apostle of the age, will lecture in the Prsbyterian Church Monday evening, March 10th. He will deliver only a few lectures in Kansas, and Manhattan is fortunate in having been selected as one of the favored places.

Judge D. J. Brewer, of the Supreme Court, State of Kansas, will deliver a lecture at the Congregational Church, for the benefit of its building fund, on Thursday, Feb. 27. Subject: "A woman in Court." Admission 25 cents. Students of the College and High School, 15 cents.

DIRECTIONS TO APPLICANTS.

TERMS OF ADMISSION.

Candidates for admission must be fourteen years of age, and pass a satisfactory examination in reading; arithmetic, through decimal fractions; and English grammar, to syntax. Classes are started at the beginning of each year in Drill in Arithmetic and Drill in English; and the pupil must have the knowledge above indicated, else he will be unable to retain position if admitted.

Pupils will be received at any time during the year, if able to pass an additional examination upon the subjects studied by the classes which they expect to enter. But they will find it greatly to their advantage to be present at the opening of each term, or as soon thereafter as posssble.

GRADES.

Both the Literary and Industrial recitations are graded daily upon a scale of 100; and an examination of all classes is made at the close of each month. A student not attaining an average grade of sixty is promptly dropped to a lower class, or excluded from the Institution until able to do so. The work of grading is strict and uniform in all the departments, and this process is rigorously used for sifting out incompetent and indolent pupils; thus more than accomplishing all that is designed to be effected by a "high standard of admission." Hence, the student's continuance in the College wholly depends upon his own action.

The course is based upon the determination to make the labor required in the preparation of one industrial and three literary recitations as much as the average student can perfectly perform, in ten hours a day. We design to give the pupil the worth of the time expended at College; and, in order thereto, he must do a full day's work with brain or hand. Only those students who can maintain a standing of ninety in each study will be allowed to take more than the prescribed number of recitations; and no one will be permitted to have less than one industrial and three literary recitations.

RELIGIOUS.

Unless otherwise directed by parents, students are required to attend chapel at 8:30 A. M. on academic days, and divine service once every Sabbath.

EXPENSES.

There are no charges whatever for enrollment, attendance or instruction in the regular courses; nor are there any "contingent fees" for the repair of buildings, for the use of books or apparatus, for diplomas, or the kindred privileges usually grouped under the term "contingent." Male students are furnished instruction, the use of apparatus, instruments or tools, in both the literary and industrial classes marked out for them, without any charge. And the same is true of female students in the regular classes provided for them. Printing and Telegraphy are industrials primarily provided for the education of female students, and male students taking either of these are charged $1 per month for use of instruments.

Instrumental music is a fine art or "accomplishment," rather than a mechanical art. We do not place it among our "industrials" in the same sense, or for the same purpose, that we do those provided for teaching the trades. Accordingly, a fee of $12 per term, or seventy-five cents per week is required from female students for tuition and the use of pianos or organs.

The only charge made for material in either the literary or industrial departments is for the chemicals used by students in laboratory practice, which are furnished at wholesale prices, and amount to but a small sum.

Furnishing an absolutely free education is as much as can be reasonably asked; and the Institution neither boards, clothes, nor supplies the student with text-books. Boarding can be obtained in private families at from $2.75 to $4 per week. Washing costs from seventy-five cents to one dollar per dozen. Text-books, which can be procured in Manhattan, cost from $2 to $5 per term.

No student need expend over $5 per week; and many of our best pupils are living at $1.25 per week. Students desiring to "board themselves" can do so at from $1 to $2 per week. In a club of four young men, renting a house, the average cost to each for the term was $1.11 per week.

LABOR.

Manual labor by the students may be for either of two purposes: First, to acquire skill in a given art; second, to earn money. In the first case, the labor is educational; in the second, it should be paid for by the party benefited.

Educational Labor.—Manual labor in the reciations of the Industrial Departments, like mental labor in those of the Literary Departments, is purely educational and will not be remunerated. While the interest of the student will be held paramount in the direction of this labor, the practice necessary to dexterity will be required.

Remunerated Labor.—When the Institution needs labor on the Farm or elsewhere which is not educational, but simply for its own profit, and which a student is able and willing to perform, it becomes an employer instead of a teacher, and he an employe instead of a scholar. It pays for work, he works for pay. The relation between them is commercial, not educational; and both parties must act upon business principles. Hence, the College furnishes only such employment as its own interests require, and will pay according to the value of the service rendered at from seven to ten cents an hour.

AMOUNT EARNED.

It is impossible to predict how much a given person can earn, since that depends upon what he can do and what work there is to be done. Hence, it is wholly impossible for us to answer the question so often asked: "Do you think I can meet my expenses by work?" Some students make one-half their expenses, some the whole, and exceptional men have made more than expenses. As a rule, a faithful boy skilled in farm work can earn half his expenses on the Farm or in the Nursery. During the year he can ordinarily acquire sufficient skill in the wood or iron shops to enable him to make articles for sale. The whole question is one for his own consideration and decision. We can teach all who come, but cannot absolutely *promise* anything more. Hitherto we have refrained from holding out strong inducements respecting the amount of labor we might have to offer; but in view of the fact that during each of the last three years we have had more to do than the students could perform, we are inclined to give greater and positive encouragement on this point. Any boy who is in dead earnest, who is familiar with farm operations, and who can raise $50 to start with, should be able to carry himself through the four years' course. And certainly this places an education within the reach of every determined boy. As yet we are unable to offer similar advantages to girls, not requiring labor in the College departments which they can perform.

RULES.

1. Behave as a true man or woman should, at all times and in all places.

2. Attend to your own business promptly, thoroughly and courteously; and vigorously let alone that of other people.

3. Penalty: "Leave!"

PUBLICATIONS.

The "Hand-Book," published in 1874, containing a full discussion of the educational question and the aims of the Institution, will be forwarded to any one desiring it.

THE INDUSTRIALIST, a weekly journal edited by the Faculty and published by the Printing Department, contains original and seasonable articles on the Farm, Orchard, Trades, Sciences, and Education. Price, 75 cents a year. Address A. A. Stewart, Manhattan.

CALENDAR.

Winter Term 1879.—Began Friday, January 3d, 1879.

TO NEW STUDENTS.

Bring the text-books you have been using. On arrival, first arrange for your boarding. A. A. Stewart, Sup't Printing Department, will furnish information, either by letter or on application, concerning boarding places or rooms for rent. Report to the President at 8:30 A. M., immediately after chapel, for enrollment.

For further information apply to Jno. A. Anderson, President, Manhattan, Kansas.

LITERARY SOCIETIES.

ALPHA BETA.—Chartered, December 26th, 1870. Meets in College building every Friday at 2 P. M. Ladies admitted. New students cordially invited to attend. W. H. SIKES, President.
MISS MARIA E. SICKLES, Secretary.

WEBSTER.—Chartered, January, 1871. Meets in Telegraph Hall every Saturday evening. Visitors, especially students, always welcome.
H. C. RUSHMORE, President.
J. N. MORROW, Secretary.

RAILROAD TIME-TABLE.

KANSAS PACIFIC RAILWAY.

PASSENGER ARRIVES.

No. 2, going East	11:14 A. M.
No. 4, going East	3:47 A. M.
No. 1, going West	5:10 P. M.
No. 3, going West	4:33 A. M.
No. 7 (freight), going West	8:15 A. M.

Nos. 1 and 2 run daily; Nos. 3 and 7 run daily except Monday; No. 4 runs daily except Sunday. Passengers with tickets are carried on No. 7.

GEO. C. WILDER, Agent.

[*Concluded from first page.*]

equally fertile soil, and a better climate, with less than 20 people to the square mile.

Germiany, with an area of 212,091 square miles, has a population of 42,727,360, or about 200 persons to the square mile.

Great Britain and islands, with a population of 31,628,338, has an area of 121,230 square miles, or about 268 persons to the square mile.

The United States, with an area of 3,603,884 square miles, has a population of 45,000,000, or 13 persons to the square mile; and if we take the States and exclude the Territories, the population is 22 persons to the square mile.

We have more than 2,000,000,000 acres of land, with a soil and climate unsurpassed and adapted to the production of almost everything necessary to the wants and comfort of mankind; three-fourths of which can be used for agricultural purposes, and much of it, indeed more than one-half, can be purchased for less than the rental value per acre for a single year of the agricultural lands of England, France, Germany and Belgium.

These figures show that we have ample territory with agricultural facilities to support a population of *many hundred millions*, and then not be so densely populated as the countries above named.

In substantial prosperity and progress, in all that makes a nation great, we must soon take the lead of all other countries; and New York, supported by our vast agricultural, manufacturing, and commercial resources, at no distant day ought to and will be the financial and commercial center of the world, as London is to-day.

This prospect should stimulate the encouragement of agriculture and commerce, which must contribute so largely to this result. It must, however, be admitted that, instead of doing so, the tendency and effect of our national legislation has been to encourage other industries and the building up of towns and cities at the expense of the soil, the mine and commerce.

Several of the countries of Europe are now overcrowded with people, and it is a question whether or not they can long support the increasing population. There is trouble to-day in England and Germany from this source.

Lord Derby, in a recent address made at Liverpool on the subject of the present depression in England, stated in substance, "after much reflection," that England could not afford to pay large sums for food to America and other countries and compete with them in manufactures, and advised as a remedy wholesale emigration to America and Australia.

TARIFF AND OTHER LEGISLATION AGAINST THE FARMER.

The duty on articles used by farmers averages 42½ per cent.

	Per cent.
On iron and steel it is from	35 to 50
Leather	25
China and earthen ware	40 to 50
Hosiery	35 to 60
Hats, bonnets, etc	40
Carpets	50 to 68
Salt	60
Ready-made clothing	50 to 60

The farmer pays the above duties and many more, and the eastern or manufacturing States receive the greater part of the benefit.

Then, again, most all the internal revenue comes from the tax on two items of agricultural products, one produced directly the other indirectly from the soil.

The revenue from the tax on tobacco in 1878 was $40,091,754.67; spirits and liquors, $60,357,867.58; total, $110,459,622.25: and this comes almost entirely from the southern and western States.

In 1877 Virginia paid internal-revenue tax to the amount of $7,932,220 which is more than twice as much as all the New England States combined paid; West Virginia paid $461,030.50, which is more than the States of Maine, New Hampshire and Vermont together paid.

The following table shows the receipts from tobacco and spirits in the States named for the year 1878:

States.	*Spirits.*	*Tobacco.*
Connecticut	$ 270,328 89	$ 156,348 63
Illinois	16,072,539 33	2,829,805 58
Kentucky	4,866,480 32	1,746,118 21
Maine	15,217 42	46,356 84
Massachusetts	1,055,739 29	693,925 63
New Hampshire	65,144 06	30,572 51
Ohio	10,127,172 80	3,476,501 63
Rhode Island	39,072 21	63,254 00
Vermont	11,752 32	23,348 14
Virginia	302,580 21	6,145,442 85

This tax is mainly paid by agricultural States, as the above table shows, and falls directly or indirectly on the farmer, while manufactures and other industries of the non-agricultural States are aided by protection at the expense of the former.

So, in one way or another, the burdens of taxation fall heaviest on the farmer and agricultural interests, against which there should be some relief.

AID RENDERED BY DIFFERENT GOVERNMENTS TO AGRICULTURE.

From reliable sources we learn there was expended for the year 1877, by some of the governments of Europe, in aid of agriculture, the following sums:

Austria	£1,099,025 or	$ 5,495,125
France, for agriculture and commerce,	110,672,050 francs or	20,534,410
Prussia	10,459,343 marks or	2,612,340
Italy, for agriculture and commerce,	10,863,981 livres or	2,715,995
Russia, for agriculture, public lands,	18,434,912 rubles or	14,826,184
Great Britain	£159,118 or	795,590
Sweden		651,737
United States		174,686

The following appropriations for the years named will be sufficient to illustrate the difference in the amounts appropriated for the various departments of the General Government:

Departments.	*1878.*	*1879.*
Dep't of State	$ 1,353,807 50	$ 7,134,325 64
Treasury Dep't	159,222,392 61	167,122,213 75
War Dep't	4,245,628 00	68,263,792 48
Navy Dep't	13,745,422 90	20,684,492 83
Interior Dep't	36,674,573 32	38,245,551 74
Post-Office Dep't	3,469,045 00	7,295,389 98
Dep't of Justice	3,424,950 00	3,918,913 94
Dep't of Agriculture	188,640 00	204,900 00

These figures show how liberally the prosperous and progressive European governments aid and encourage agriculture, and how little we do for this great interest. Russia, our great and principal agricultural rival, spends in support of agriculture and in respect of her public lands more than seventy times as much as the United States; and the little Kingdom of Sweden more than three times as much as this great nation.

We have what is called a Department of Agriculture, with a commissioner at its head, whose salary is $3,000 per annum, and the next salary is $1,900; while there are a large number of employes in other Departments whose chiefs of divisions or heads of bureaus receive from $3,000 to $6,000 per annum. The salaries of the Agricultural Departments are either too low or the others are too high.

In the Senate the Committee on Agriculture is composed of five, while most of the other committees have from seven to nine members. The Committee on Commerce has nine and on Railroads eleven members. Why should not the Committee on Agriculture be made equal to any committee of the Senate? The slender aid we render in the way of appropriations and the attention given to agriculture in Congress indicate that we hold it inferior in importance to industries of much less magnitude and moment. The Commissioner of Agriculture within the last few years has done well, considering the limited means at his command, and deserves credit. Considering the vast importance of agriculture to the country, the number of people engaged in it, the interests dependent upon and affected by it, it seems to me that it deserves and demands at our hands more attention and substantial aid. There is nothing sectional or political about agriculture, and all parts of the country are interested in it.

AGRICULTURAL IMPORTS.

A large amount of agricultural products are imported which might and ought to be grown within our own borders.

* * * * * * *

From official tables, it will be seen that the home value of articles imported in 1878 was $156,151,723.70; value with duty added in 1878 was $210,918,125.46. This is a large amount of money paid for agricultural products that ought to be produced in our own country. We find by these tables that we pay foreign countries for —

Sugar and molasses, annually, nearly	$90,000,000
Tobacco and cigars, annually, nearly	6,000,000
Wine, annually, nearly	4,000,000
Wool, annually, nearly	7,000,000
Barley, annually, nearly	4,000,000
Eggs, annually, nearly	726,000

Eggs come in *free* of duty; and the amount paid is so large for so small an article, that the following official table is given, which shows quantity, amount paid, and where from:

Countries.	*Quantity*	*Value.*
	Dozens.	
China	87,800	$ 6,022
Nova Scotia, New Brunswick and Prince Edward Island	1,096,963	126,574
Quebec, Ontario, Manitoba and Northwestern Territory	4,866,981	593,297
Hong Kong	1,695	100
Mexico	210	44
Total	6,053,649	$726,037

Excluding silk and tea, the successful production of which is yet doubted, and we pay annually more than one hundred millions for products that might be grown in our own country.

In the face of these figures and facts, argument is not needed to show that agriculture is of the first and highest importance to our people, and should be properly aided and encouraged.

A nation, like a corporation or individual that lives beyond his income, must in time become poor and in debt. Afeer the war, between 1865 and the panic in September, 1873, we had what is usually called good times, when in fact as a nation we were paying to foreign countries much more than we received from them; that is, our imports were more than our exports, as the following official table will show:

NET IMPORTS AND DOMESTIC EXPORTS OF MERCHANDISE, COIN, AND BULLION.

STATEMENT showing the total net imports* of merchandise, coin, and bullion into the United States, and the domestic exports of merchandise, coin, and bullion from the United States, from 1860 to 1878, inclusive.

Year ending June 30—	*Total net imports.*	*Total domestic exports.*
1860	$335,233,232	$373,189,274
1861	315,004,726	228,699,486
1862	188,902,263	210,688,675
1863	226,796,336	241,997,474
1864	309,305,955	243,977,589
1865	216,441,495	201,558,372
1866	430,770,041	420,161,476
1867	397,220,063	334,763,005
1868	349,023,682	353,135,875
1869	412,140,841	318,082,663
1870	431,950,428	450,500,275
1871	513,033,809	512,802,267
1872	617,569,017	501,285,371
1873	635,467,636	578,938,985
1874	572,080,910	629,133,107
1875	531,472,529	583,141,229
1876	455,407,836	575,620,938
1877	466,265,045	632,804,962
1878	446,039,908	707,738,783

*Net imports mean total imports less imported merchandise, coin, and bullion afterward exported to foreign countries, (specie values).

The above statement clearly shows we paid, between 1860 and 1873, $439,087,737 more for imports than we received for exports.

In 1873 trade reversed, and has been largely in our favor up to this time. During the five fiscal years between 1873 and 1878, we exported or sold $659,072,791 more than we imported or bought. This is a good sign, and shows we are winding on and not off; and if we continue to export largely more than we import, it is only a question of time, which I believe is not distant, when we will be a prosperous and happy people.

Europe, in addition to paying us the large balance of trade now in our favor, according to a recent statement of David A. Wells, expends an average annually of $1,500,000,000 for war and the support of standing armies, while since the formation of our Government our average expenses annually for these purposes have been about $45,000,000.

In most of the governments of Europe all young men between the ages of twenty and twenty-seven are obliged to serve in the standing armies, thereby taking seven years of each man's life from useful industries.

If we had no other advantages than these named, we would in time grow rich and Europe poor.

THE INDUSTRIALIST

VOL. IV. MANHATTAN, KANSAS, SATURDAY, MARCH 1, 1879. No. 46.

THE INDUSTRIALIST.

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OF THE
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Address A. A. STEWART, Manhattan, Kas.

Regents' Report.

To his Excellency GEORGE T. ANTHONY, *Governor of the State of Kansas:*

DEAR SIR: — The Regents of the Kansas State Agricultural College respectfully submit the following report and accompanying documents. The reports of the fiscal officers, and of the several departments of instruction, cover the period beginning December 1st, 1876, and ending June 30th, 1878. Those of the Regents and President are brought down to December 30th, 1878.

FACULTY.

During the collegiate years of 1876-77 and 1877-78, no changes occurred in the Faculty, as noticed in our last report. In the summer of 1878 the resignation of two professors made vacancies which have been filled, and the Faculty is as follows: (See first page.)

COURSE OF STUDY.

The course of study has been compressed into four years instead of six, as at our last report, and besides the saving of time and expense to the student, it has been made more practical and more directly adapted to the wants of the industrial classes of Kansas, for whose benefit the institution was endowed.

STUDENTS.

During the calendar year 1877, two hundred and twenty-eight (228) students, coming from forty-five (45) counties or States, were in attendance; and during the calendar year 1878, there were two hundred and thirty-eight (238) students, representing fifty-one (51) counties or States. Their progress has been highly satisfactory to us, and will prove most beneficial to them as future citizens of Kansas.

APPROPRIATIONS.

The last Legislature made the following appropriations, each of which has been duly expended for the specific purpose designated:

FOR THE FISCAL YEAR ENDING JUNE 30, 1878.

For the erection of a stone barn for Farm Department	$4,000 00
For finishing Mechanical and College buildings	1,000 00
For sidewalks, stone	300 00
For the payment of the claim and interest thereon of W. H. Fletcher	1,974 46

FOR THE FISCAL YEAR ENDING JUNE 30, 1879.

For Practical Agricultural building	$12,500 00

Of the $7,774.46 given for the year 1878, but $5,800 were for improvements, the $1,974.46 being for the payment of an old claim contracted by a former administration and audited by the Legislature when making the appropriation. The action of the Board in the matter was simply clerical, in enabling Mr. Fletcher to draw the money. With the $4,000 given for a stone barn, a most serviceable and durable building has been erected.

In accordance with the statement made to the Ways and Means Committees of the last Legislature, the appropriation of $12,500 for an agricultural building has been expended in the erection of the north wing of the main College Building. It is of stone, range work, raised pointing, two high stories and a cellar, and is 53 feet by 109 feet. The plans and specifications were prepared by Mr. E. T. Carr, architect, and the work has been executed under his direction. The present wing will be fully completed and furnished with the appropriation, and will be ready for use on the first of February, 1879. It has been planned for the recitations and cabinets of the Department of Practical Agriculture, but until the main building is erected will be in part used for other departments of instruction. It contains five large rooms for classes and museums, and four smaller rooms for offices. Taking into account the space and character of material and workmanship, it is believed to be the cheapest building yet erected by the State.

The main building, for which there is an immediate and imperative need, will consist of a similar wing on the south, and a central building, all being under one roof. The corridors will be 240 feet in length. The south wing is designed for the Literary and for the Woman's Department, and the central building for an assembly room and offices. The architect is making a careful estimate of the exact cost; but, judging from our past experience, we anticipate that the whole building can be completed for $40,000; and when completed there need not for many years to come be any further call upon the State for the erection of buildings.

COLLEGE WARRANTS.

Under an act approved March 1, 1870, a former Board issued certain scrip, or "College warrants," in denominations of $100, amounting to $33,700, the last installment of which became due in 1877. An account of the liability can be found in the First Annual Report of the Board of Commissioners on Public Institutions, 1873. As these warrants have matured, previous Legislatures have made appropriations for their payment; and the joint Ways and Means Committee of the last Legislature recommended an appropriation of $11,000 for the final settlement of the indebtedness. The measure failed in the House; and in the last days of the session a bill was passed authorizing the Board to invest the endowment fund in bonds, with which to take up these warrants. As there was no other method of preventing suit and preserving credit, the Board accordingly issued the bonds and paid the warrants. A reference to the provisions of the Congressional act, which provides that the endowment shall remain forever undiminished, will satisfy any one that the use of that fund for the payment of these warrants is in violation of the law of Congress. Accordingly, we respectfully request that an appropriation be made for restoring this sum to the endowment fund.

The Congressional law further provides that the State shall be at the expense of the management of the lands and investment of the endowment. To prevent the sacrifice of property under the "tax decision" of the Supreme Court, we have, under an act authorizing us so to do, paid taxes and other expenses connected therewith from the funds of the College. We respectfully submit that, in accordance with its obligation as a trustee of the General Government, the State should reimburse the College for expenditures, which in honor and justice should have been paid by the State.

The accompanying reports furnish any additional information that may be desired. All of which is respectfully submitted.

S. M. WOOD, President,
W. L. CHALLISS, Vice-President,
J. A. ANDERSON, Secretary,
B. L. KINGSBURY,
J. R. HALLOWELL,
T. C. HENRY,
E. B. PURCELL,
Board of Regents.

Manhattan, Kas., Dec. 20, 1878.

THE annual value of silk ribbons exported by Switzerland to the United States, has fallen in the last five years from over $4,010,000 to about $1,000,000.

ONE of the most pleasing features about Japanese progress is the attention paid to female education. The Empress, who is said to be a very able woman, spends both time and money in fostering everything which looks toward the elevation of her countrywomen.

Report of the President.

To the Board of Regents of the Kansas State Agricultural College:

GENTLEMEN: — During the calendar year 1877, there were two hundred and twenty-eight (228) students in attendance; of whom 150 were males and 78 were females; the average age being 18.12 years. Forty-five counties or States were represented, as follows:

Atchison	4	Marshall	3
Brown	1	McPherson	1
Butler	2	Missouri	3
Chase	1	Mitchell	1
Cherokee	10	Nebraska	1
Clay	6	Nemaha	2
Cloud	1	Neosho	2
Colorado	2	New Mexico	1
Cowley	1	New York	4
Crawford	1	Osage	2
Davis	13	Osborne	1
Dickinson	3	Pennsylvania	2
Ford	1	Phillips	3
Franklin	2	Pottawatomie	13
Greenwood	3	Rice	2
Indiana	1	Riley	88
Jefferson	3	Russell	1
Jewell	2	Saline	1
Johnson	3	Sedgwick	3
Labette	5	Shawnee	7
Leavenworth	3	Wabaunsee	9
Linn	1	West Virginia	1
Lyon	6		

During the calendar year 1878, there were two hundred and thirty-eight (238) students in attendance; of whom 169 were males and 69 were females; the average age being 18.16 years. Fifty-one counties or States were represented, as follows:

Allen	1	Lyon	7
Atchison	6	Marshall	4
Barton	1	McPherson	3
Butler	5	Missouri	4
Chautauqua	4	Mitchell	4
Cherokee	18	Montgomery	4
Clay	10	Nemaha	6
Cloud	1	Neosho	1
Coffey	3	New York	2
Cowley	3	Osage	1
Crawford	2	Osborne	1
Davis	5	Ottawa	3
Dickinson	5	Pennsylvania	1
Ellsworth	2	Pottawatomie	10
Ford	1	Republic	1
Franklin	2	Rice	1
Greenwood	2	Riley	64
Harvey	1	Saline	2
Illinois	1	Sedgwick	1
Indiana	3	Shawnee	7
Iowa	1	Sumner	2
Jackson	2	Vermont	1
Jefferson	4	Wabaunsee	10
Jewell	1	Wilson	2
Johnson	10	Wyoming	1
Lincoln	1		

As a general rule throughout the newer States, about fifty per cent of the students attending a State institution are residents of the county in which it is situated, thus giving color to the allegation frequently made in Legislatures, that a given institution is mainly for the benefit of the particular locality, rather than for that of the whole State. In 1877, only thirty-eight per cent of our students were from Riley county, and in 1878, only twenty-seven per cent. In 1877, but sixteen per cent of the whole number were from Manhattan, and in 1878, but eight per cent.

These facts, taken in connection with the increase of representation by counties and States from forty-five in 1877 to fifty-one in 1878, are the best evidence that the Agricultural College is a State rather than a local institution, and is distinctively an institution for the education of the industrial classes, rather than for the education of the professional classes.

In closing my last public report as President of this institution, and as the matured result of years spent in a persistent study of the difficult problem of industrial education, I desire to express the opinion that the real work of this or any other agricultural college must, from the nature of the case and of the Congressional endowment, be that of furnishing to the future farmer or mechanic an education which will prove as practical and valuable to him in his vocation, as is a medical education valuable to the practic-

ing physician; that the real success of an agricultural college in performing this work will chiefly depend upon the cash value to the farmer or mechanic of the knowledge taught in such college; that the course of study followed in this institution is, with the exception of a few studies, better adapted to secure the object for which the Congressional endowment was given, than that of any other of the existing agricultural colleges; that, if three or four of the present fancy branches were stricken out, and others of greater practical value to the farmer, mechanic or working-woman were substituted, a course of study would be furnished that could not fail to insure a better education for the industrial classes of Kansas than is elsewhere provided in this country; and, finally, that no other State in the Union has it so easily within its power to furnish its working classes with an education fully as valuable to them as is a professional education to the professional classes, provided that this institution steers clear of any and all studies foisted into the course because of "mental discipline" instead of usefulness, or because of "culture" instead of the cash value of knowledge to the workman. In my judgment, if the line of policy adopted by the Board Sept. 3d, 1873, is squarely followed and fully developed, Kansas will have solved the vexed problem of industrial education for the United States.

Very respectfully,

JNO. A. ANDERSON.

Manhattan, Kas., Dec. 20, 1878.

THE INDUSTRIALIST.

SATURDAY, MARCH 1, 1879.

E. M. SHELTON, Managing Editor.

ASSOCIATE EDITORS, MEMBERS OF THE FACULTY.

A WONDERFUL new corn, that has actually yielded one hundred and sixty bushels (shelled) per acre, is illustrated and described in the "corn" number of *The Rural New-Yorker*. It seems to be an important thing; and the *Rural*, having secured the seed, will distribute it free among its subscribers, and offer cash premiums for the largest yield from this seed. The "corn" number, explaining everything, will be sent free to all. Address, *Rural New-Yorker*, New York.

Cattle Plague.

The Legislature of New York has taken prompt measures to suppress the cattle plague which has appeared on Long Island. By a law previously enacted, the Governor of that State has extraordinary powers conferred upon him, in taking measures to suppress diseases that may break out among domestic animals. On Wednesday, the 20th ult., a bill appropriating $10,000 to the use of the Governor, for that purpose, was introduced, passed both houses, and received the signature of the Governor. On the evening of the same day, a commission was issued to Gen. M. R. Patrick, formerly President of New York State Agricultural Society, and to Prof. Law, of Cornell University.

The powers given to this commission are: "To quarantine all infected stables; to slaughter all diseased animals; to quarantine all persons coming in contact with diseased animals; to disinfect all cars and stables occupied by infected animals; and to prevent healthy animals from being brought into infected stables."

It is hoped that these energetic measures will prevent the further spread of this disease—the pleuro-pneumonia.—*M. L. Ward.*

Hard Times in the Far East.

Hard times in America are quite a differthing from hard times in the far East. A late number of the Japan *Gazette* points out some of the miseries endured by the Mongol. In Japan, a wide-spread discontent has seized the people, which only the strongest measures have been able to repress. This has been greatly increased by an over-issue of paper money, which has depreciated twenty to thirty per cent, adding greatly to the cost of the necessaries of life.

In China, on account of the famine of last year and from other causes, it is estimated that the foreign trade of the present year will be less than two-thirds of the light trade of last year. In some of the remote markets of the empire, foreign goods have been held in stock for two years, the people being unable to buy anything except food. To add to the embarrassments of the "flowery kingdom," India steps in, a powerful rival for the one trade which John Chinaman has monopolized so long. The yield of Indian teas is now "fairly equal to a displacement of 60,000,000 pounds of China tea." What is worse for the almond-eyed, "Indian tea does not, on account of its inherent strength and scientific preparation for shipment, suffer deterioration by long storage." Good Indian teas are fresh and strong after three years' storage, whereas the best China teas are sadly depreciated after less than a year's warehousing. The disadvantage of all this to the Chinaman is, that he cannot wait for his market; he must sell, or suffer greater losses. The silk market is reported as in even worse condition. With India robbing her of her tea monopoly, Japan of the silk trade, and the United States of the Great Chinese Wall, it looks very much as though China would soon learn what "hard times" are.—*E. M. S.*

Wheat and Cattle.

We recently received from a friend the second annual report of the cereal products of the State of Michigan, a pamphlet of thirty odd pages. Coming from a great agricultural State, this is a meager production indeed; and all the more so from the confessed fact that the statistics cover a very limited range, and within this are quite incomplete. Michigan has no bureau, or department of agriculture, and no Alfred Gray to summarize the results of the labor of its people. Nevertheless, we gather from the figures of this pamphlet one fact that lies at the foundation of improved agriculture; namely, that, "comparing the several counties with one another, there is a close correspondence in the yield of wheat and the number of cattle,—too close to be merely accidental. If we accept the facts,—which are nearly correct,—this writer shows pretty conclusively that those counties which gave the largest yields per acre had the greatest number of cattle, and on a given area. This is a truth of universal application in older States. The same fact has been shown, we believe, for New York and other Eastern States, where the remarkable fact was brought out that those dairy counties devoted almost exclusively to cattle-keeping, did not carry as many cattle per acre as the counties in which mixed husbandry was practiced. When the passage of the corn laws, in 1846, compelled the English farmers to turn their attention more directly to cattle-raising, the average yield of wheat per acre jumped up from twenty-four bushels, when grown, according to Arthur Young, upon the best soils, to thirty bushels, when grown upon good and bad soils alike.

We, in Kansas, cannot now feel the full force of this truth. Our fields are vast store-houses of fertility, which we can afford to sell very cheaply; but ultimately, and before many years have passed, he who grows the biggest crops of wheat will keep the most cattle and the best.—*E. M. S.*

THE time has passed when a man can be a successful farmer or horticulturist without a careful preparation for the work. Selah!

Education in Switzerland. No. II.

Of all the factors that contribute to the development of an effective school system, the teacher is the most important. Knowing that it is hopeless to attempt to elevate the character of the education of a country without first raising the character and position of the teacher, the different cantons of Switzerland have each founded a normal school; and, if there is anything especially praiseworthy in the educational system of that country, it is the careful and thorough education which is given in these institutions. In Switzerland, the institutions for the training of teachers are called "teachers' seminaries," which name will be used in this and subsequent articles.

No person is permitted to teach without a diploma; and there is only one kind given or recognized, which is valid for a lifetime. To obtain this diploma, the candidate must be of good health and robust constitution, be at least eighteen years old, bring a certificate of good moral conduct from the mayor of his town and his teachers, be a graduate of a recognized State teachers' seminary, and pass a satisfactory examination in the different sciences and arts relating to his profession. The following is an outline of the scope of the examinations, which generally last several days: German and French, mental and written arithmetic, geometry, biblical history, history of the world, history of Switzerland, pedagogics, mental philosophy, algebra, natural history, physics and chemistry, and geography. The character of the handwriting appears from the examination papers. The examination in music consists in singing an easy song from a sheet of original music drawn out of a pile, and by playing another song, similarly selected, on the violin or grand organ, as the candidate may choose. In drawing, the object—as a base-viol, a spinning-wheel or heating-stove—is placed before the candidates, and they are required to draw shaded perspectives of them from their different standpoints. The examination in methods of teaching consists in giving catechetical lessons to an imaginary class upon subjects assigned by the examiners. The candidates are also examined in "Reck and Barren," exercises in gymnastics. Latin is not demanded; but some cantons require trigonometry and other higher branches of mathematics.

Space does not permit me to enter upon a minute description of the different seminaries of the country, many of which I have visited personally; but I cannot refrain from giving the unanimous opinion of the Swiss educators on two or three points connected with these institutions.

First: The exclusion of female teachers from all but the lower classes of graded schools, and, in most cantons, from teaching at all. The reasons for this are not in the old prejudice against the weaker sex, but in the fact that it does not pay the State to educate women for this profession. Below it will be noticed that the education of teachers costs the State annually thousands of dollars, and experience has proved that women, on an average, will not teach over three years, as they exchange their profession, at the first desirable opportunity, for their natural vocation—that of a mother and a housewife.

Second: The necessity of connecting manual labor with the instruction given in the schools. A company of young men always have a certain amount of "gas" to give off; and, if they are not permitted to work, they will do mischief by fighting or pulling each other, by injuring the buildings or furniture, and by feeling weary or excited, if these inclinations are suppressed. Besides this, the great difficulty, in educating a teacher of the poor, is, in advancing his intelligence and elevating his moral character, to avoid raising his tastes and feelings so much above the class from which he has been selected,—and with which he is called upon afterwards to associate as teacher, adviser and friend,—as to render him disgusted with his humble companions and with the toilsome duties of his profession. In educating the teachers, therefore, far above the classes whom they are intended to instruct, the Swiss are careful to habituate them so that, when they leave the seminary, they find that they have changed from a situation of humble toil to one of comparative ease. Most cantons have farms connected with their seminaries for this purpose, and the pupils have to work in the field a certain number of hours each day, besides doing their housework.

Third: All the professors and teachers form one large household. No one is permitted to board or room elsewhere. The State furnishes everything necessary to the education and welfare of the seminarists. They sleep together in large halls, provided with single beds, supervised by one of their professors, who sleeps with them. They eat at one table, the professors boarding with them. They assist in turn in the kitchen, saw the wood, work on the farm or in the garden, make excursions together, pray and go to church together. Besides board and lodging, they receive, in many cantons, even their books, stationery and clothing from the State.

In a report on the Vehrli Seminary, at Kreutzlingen, canton Thurgau, by Dr. Kay, an Englishman, we find the following testimony in regard to the advantages of such a household arrangement:

"In such a circle can a true, religious sense take the firmest and deepest root. Here it is that the principles of christian feeling can best be laid, where opportunity is continually given for the exercise of affection and charity, which are the first virtues that should distinguish a teacher's mind. Here it is that kindness and earnestness can most surely form the young members to be good and intelligent men, and that each is most willing to learn and receive an impress from his fellow. He who is brought up in such a circle; who thus recognizes all his fellow-men as brothers, serves them with a willingness wherever he can, treats all his race as one family, loves them, and God their father above all,—how richly does such a one scatter blessings around! What earnestness does he show in all his doings and conduct! What devotion does he display in the business of a teacher! How differently from him does that teacher enter and leave school, whose feelings are dead to a sense of piety, and whose heart never beats in unison with the joys of family life!"

The course of instruction in the seminaries is generally of three years' duration. Zurich gives a five years' course. To be admitted into a seminary, a candidate must be at least fifteen years old, be of good health and sound constitution, show a natural aptitude for teaching, and, we may well say, be a poor boy, as from these only, practically, good teachers can be made. On the day appointed, all the young candidates who have complied with the preceding regulations are examined in the common school branches, and those standing highest are then elected students of the seminary to fill the existing vacancies. On entering the seminary, he must sign a contract with the State, which binds him to teach five years in the public schools of the canton, if called upon, or to pay a sum varying from 500 to 2,500 francs if he prefers to "saddle over;" that is, to leave the profession before the five years expire.—*J. D. Walters.*

THE INDUSTRIALIST.

SATURDAY, MARCH 1, 1879.

The second monthly examination of this term was held yesterday. Good work has been done during the month by all the students.

We hope, next week, to be able to give the readers of the INDUSTRIALIST Mr. Watson's lecture on "The Breeding of Short-horns and Other Pure Breeds," to be delivered at the College this afternoon.

Justice Brewer, of the Supreme Court, favored the different departments of the College with a hasty glance on Friday morning. His lecture, delivered on Thursday eve, is very highly spoken of by all.

We have had all kinds of weather during the week past. Winter snow-storms, summer sunshine, and March squalls have alternated with each other. To-day we have a heavy, south wind, with fair sky; what to-morrow will be no one can tell.

The Senior Class has this week concluded its orations at least for the present. The subjects discussed by the young men have been chiefly of a politico-economical character; and, generally, the topics were very well handled. The second and third-year classes are to follow, in course of time.

A queer little stranger was introduced to the College herd day before yesterday, being nothing more nor less than a half-bred Galloway from one of our best Short-horn cows. The little chap—who is a she—is blacker than Arnold's writing fluid, and as handsome and vigorous a specimen as can be found.

Some one stole a beautiful plant, in full bloom, from the Horticultural building, the other day. We don't envy any one the enjoyment which he may take with that flower—an emblem of purity and innocence. One can hardly believe that there is in this neighborhood a soul so small or a heart so hardened as to commit such a mean, contemptible act.

Our Schools is the name of a new monthly, published at Lawrence, Kas., and "devoted to the advancement of educational interests." We have just received number two of this journal, and do not hesitate to pronounce it one of the very best of the educational papers. Typographically, it is a model of excellence.

The Kansas Farmer, in its new dress, is a thing good for "sair een." If any one supposes that the new *Farmer* does not call things by their right names, or that it has not the same facility in "collaring" frauds in the new dress as in the old,—well, let him send $2 to Topeka and try the paper one year. The *Kansas Farmer* is one of the very best and strongest of the agricultural papers of the West.

We recall the following names of persons who have visited the College this week: Mrs. A. Whitcomb, Lawrence; Miss Nellie Harvey, Wichita, accompanied by Miss Lancaster; Dr. Thayer, Keokuk, Iowa; Mrs. M. H. Jaquith, Milford; Senator Dow and friends; Judge D. J. Brewer, of the Kansas Supreme Court; Mr. W. H. Sotham, Detroit, Michigan; G. C. Wilder, Dr. Ward, Mrs. Judge Harper, Miss Jessie Allingham; all of Manhattan.

Mr. W. H. Sotham, of Detroit, Michigan, the well-known agricultural writer, and for forty years the American correspondent of the London (Eng.) *Mark Lane Express*, devoted portions of Tuesday and Wednesday to overhauling the several departments of the College. Mr. S. is en route to the "far West," in the interest of his paper, to enquire into the pleuro-pneumonia business, which has disturbed the digestion of British beef-eaters of late.

We have received the January number of the *Kansas Monthly*, which is a great improvement on the preceding numbers. It contains engravings of several of the State institutions of learning, and is accompanied by an excellent map of the State of Kansas. It gives a list of the Kansas press, of the officers of the State government, of the members of Congress, and of the members of the State Legislature. Its pages are filled with reading interesting alike to immigrant and to resident. Send to J. S. Boughton, Lawrence, Kansas, for a specimen copy.

The Alpha Beta Drill Club was fully organized last Friday. It meets at half-past one. Any one desiring practice in parliamentary tactics will find it to his advantage to come. Any one desiring may become a member. The debate on the question, "*Resolved*, That the decision of the Fishery Commission was unjust," was decided in favor of the affirmative. Mr. Eells declaimed; Miss Sickels read an essay entitled "Self-Made Men." During extemporaneous speaking, the subject of the origin of the universe was discussed; several different theories being brought before the Society. The Society continues to meet in its old room; and the good attendance shows that its efforts at improvement have not been unavailing. Two new names were proposed for membership.

HOMBRE.

WHAT I LOVE.

I love to watch the fading of a bright summer's day into the calm, still evening time. Time most fit for meditation! Hour most by Heaven blest! Man ceases to toil, birds and beasts seek repose for the coming night; naught breaks the reigning stillness save the falling of distant waters, or the gentle rippling of some meandering streamlet. 'Tis then I love to sit me down and think. At this hour did ever man think of crime, or determine upon some foul deed? Ah! too base a heart hath he who would thus desecrate the hour so sacred. But, when the falling dew shall kiss the drooping flowers, then let some angel bear to me thoughts of purity. If from the past he shall glean, may it be from fields of happiness, where the sunshine of joy hath ever shone. Then will no sinful storm crush my spirit.

Ah yes! I love the twilight hours. It hath a sad and holy power. Then night draws her sable mantle o'er the earth, and the twinkling visitors, one by one, appear until heaven sparkles with ten thousand lamps.

Nature hath called all into gentle slumber, and each is watched and kept by the eye that never sleeps. O night! I love thee with thy silvery moon and thy starry heavens so bright. I love the forest, too, with its gigantic trees and beautiful mosses. Who doth not find a "beauty in the pathless woods!" I love the flowers, ever looking so bright and happy, as if to cheer the pilgrim treading life's stormy path. I love the rainbow, bright and beautiful. Silently yet surely it speaks of mercy and promise. Nature, I love thee in all thy changing moods.—*A contribution to the Alpha Beta Gleaner.*

THE SOCIAL.

The first social of the present term was held in the College Chapel, Saturday evening, Feb. 22d. The students and friends, to the number of about one hundred and seventy-five, gathered to celebrate the anniversary of the birth of Washington. The exercises of the evening were opened by a song. Mr. Sikes then addressed the audience on the "147th Anniversary." The speech showed preparation, and was well received. After music from the "Combsciana Band," which was loudly applauded, Mr. Morrow made some remarks. He referred to early explorations in Kansas, its subsequent settlement, and its admission as a State of the Union. "The Progress of a Year" was the subject of Mr. Salter's speech, which was listened to attentively and evidently enjoyed.

The treat of the evening was the declamation delivered by Miss Emma Campbell, entitled, "The Birthday of Washington." The piece was rendered with freedom and animation, and was thoroughly appreciated. Mr. D. S. Leach spoke of "The Future." His remarks were full of that fire and zeal and patriotism which pervades his nature, and whch always enlists the close attention of his hearers.

The literary part of the evening's entertainment was concluded, and the next hour or more was spent in that jolly and social way which characterizes a company of students under such circumstances. In due time refreshments were served, consisting of oranges, candies, nuts and cakes. A half-hour soon slipped away into the past as, in clusters here and there, the company chatted together and enjoyed their lunch.

Thus, pleasantly, profitably, and patriotically, was Washington's anniversary birthday celebrated by the students; and all went home with a feeling of renewed devotion to country, to Kansas, and to study.

NATIONALIST ITEMS.

Court convenes next Monday.

The side-track, running past the new elevator, is down.

A car of hogs was shipped from this place, last week, averaging over 400 pounds each.

Thirteen cars of stock were shipped from this point on Monday, by several different parties.

Dr. Ward returned from Keokuk, Iowa, Thursday morning, where he has been attending college for some time past.

About one hundred guests is the average number registered weekly at the Adams House, for the month of February.

Twenty-four car loads of stone were dumped into the Blue River, at the foot of one of the railroad piers, to circumvent a threatened washout.

There are several new and very handsome monuments at the cemetery, and the lots are all protected by a wire running from posts near all the street-walks.

The workmen have commenced tearing down the old bridge. Mr. Finn, the contractor, says it will take six or seven weeks to erect the new one, but on no occasion will trains be delayed.

Mrs. Dr. Potts will deliver a temperance lecture at the Christian Church, Sunday evening. She has devoted a great many years to the cause, and has a world-wide reputation as a lecturer. All should hear her.

Miss Amanda U. Way lectured on temperance at the Presbyterian Church, on Sunday evening, to an overcrowded house. Notwithstanding the crowd, she held the close attention of the audience for over two hours, and was then, at ten o'clock, encored—an honor we never before saw received by any lecturer from a Manhattan audience.

The Manhattan and Blue Valley Poultry and Pet Stock Association held its first exhibition February 22d, at Armentrout & Co.'s old meat market. It seems noteworthy that, with so short a notice, so large a collection of good fowls could be shown. Of the thirty coops on exhibition, all were from Manhattan and near by. The birds were highly creditable to the exhibitors, and no doubt will arouse great interest in fine poultry and pet stock.

Congressman Anderson is no longer editor of the INDUSTRIALIST, the organ of the State Agricultural College, but leaves it in good hands—those of Prof. Shelton.—*Clay County Dispatch.*

John A. Anderson has retired from the editorial management of that typographical beauty, the INDUSTRIALIST, published at the State Agricultural College, Manhattan. He is succeeded by Prof. E. M. Shelton. Mr. Anderson will now turn his attention to Congressional matters, and we expect to hear a good report from him.—*Osage County Chronicle.*

DIRECTIONS TO APPLICANTS.

TERMS OF ADMISSION.

Candidates for admission must be fourteen years of age, and pass a satisfactory examination in reading; arithmetic, through decimal fractions; and English grammar, to syntax. Classes are started at the beginning of each year in Drill in Arithmetic and Drill in English; and the pupil must have the knowledge above indicated, else he will be unable to retain position if admitted.

Pupils will be received at any time during the year, if able to pass an additional examination upon the subjects studied by the classes which they expect to enter. But they will find it greatly to their advantage to be present at the opening of each term, or as soon thereafter as posssble.

GRADES.

Both the Literary and Industrial recitations are graded daily upon a scale of 100; and an examination of all classes is made at the close of each month. A student not attaining an average grade of sixty is promptly dropped to a lower class, or excluded from the Institution until able to do so. The work of grading is strict and uniform in all the departments, and this process is rigorously used for sifting out incompetent and indolent pupils; thus more than accomplishing all that is designed to be effected by a "high standard of admission." Hence, the student's continuance in the College wholly depends upon his own action.

The course is based upon the determination to make the labor required in the preparation of one industrial and three literary recitations as much as the average student can perfectly perform, in ten hours a day. We design to give the pupil the worth of the time expended at College; and, in order thereto, he must do a full day's work with brain or hand. Only those students who can maintain a standing of ninety in each study will be allowed to take more than the prescribed number of recitations; and no one will be permitted to have less than one industrial and three literary recitations.

RELIGIOUS.

Unless otherwise directed by parents, students are required to attend chapel at 8:30 A. M. on academic days, and divine service once every Sabbath.

EXPENSES.

There are no charges whatever for enrollment, attendance or instruction in the regular courses; nor are there any "contingent fees" for the repair of buildings, for the use of books or apparatus, for diplomas, or the kindred privileges usually grouped under the term "contingent." Male students are furnished instruction, the use of apparatus, instruments or tools, in both the literary and industrial classes marked out for them, without any charge. And the same is true of female students in the regular classes provided for them. Printing and Telegraphy are industrials primarily provided for the education of female students, and male students taking either of these are charged $1 per month for use of instruments.

Instrumental music is a fine art or "accomplishment," rather than a mechanical art. We do not place it among our "industrials" in the same sense, or for the same purpose, that we do those provided for teaching the trades. Accordingly, a fee of $12 per term, or seventy-five cents per week is required from female students for tuition and the use of pianos or organs.

The only charge made for material in either the literary or industrial departments is for the chemicals used by students in laboratory practice, which are furnished at wholesale prices, and amount to but a small sum.

Furnishing an absolutely free education is as much as can be reasonably asked; and the Institution neither boards, clothes, nor supplies the student with text-books. Boarding can be obtained in private families at from $2.75 to $4 per week. Washing costs from seventy-five cents to one dollar per dozen. Text-books, which can be procured in Manhattan, cost from $2 to $5 per term.

No student need expend over $5 per week; and many of our best pupils are living at $1.25 per week. Students desiring to "board themselves" can do so at from $1 to $2 per week. In a club of four young men, renting a house, the average cost to each for the term was $1.11 per week.

LABOR.

Manual labor by the students may be for either of two purposes: First, to acquire skill in a given art; second, to earn money. In the first case, the labor is educational; in the second, it should be paid for by the party benefited.

Educational Labor.—Manual labor in the reciations of the Industrial Departments, like mental labor in those of the Literary Departments, is purely educational and will not be remunerated. While the interest of the student will be held paramount in the direction of this labor, the practice necessary to dexterity will be required.

Remunerated Labor.—When the Institution needs labor on the Farm or elsewhere which is not educational, but simply for its own profit, and which a student is able and willing to perform, it becomes an employer instead of a teacher, and he an employe instead of a scholar. It pays for work, he works for pay. The relation between them is commercial, not educational; and both parties must act upon business principles. Hence, the College furnishes only such employment as its own interests require, and will pay according to the value of the service rendered at from seven to ten cents an hour.

AMOUNT EARNED.

It is impossible to predict how much a given person can earn, since that depends upon what he can do and what work there is to be done. Hence, it is wholly impossible for us to answer the question so often asked: "Do you think I can meet my expenses by work?" Some students make one-half their expenses, some the whole, and exceptional men have made more than expenses. As a rule, a faithful boy skilled in farm work can earn half his expenses on the Farm or in the Nursery. During the year he can ordinarily acquire sufficient skill in the wood or iron shops to enable him to make articles for sale. The whole question is one for his own consideration and decision. We can teach all who come, but cannot absolutely *promise* anything more. Hitherto we have refrained from holding out strong inducements respecting the amount of labor we might have to offer; but in view of the fact that during each of the last three years we have had more to do than the students could perform, we are inclined to give greater and positive encouragement on this point. Any boy who is in dead earnest, who is familiar with farm operations, and who can raise $50 to start with, should be able to carry himself through the four years' course. And certainly this places an education within the reach of every determined boy. As yet we are unable to offer similar advantages to girls, not requiring labor in the College departments which they can perform.

RULES.

1. Behave as a true man or woman should, at all times and in all places.

2. Attend to your own business promptly, thoroughly and courteously; and vigorously let alone that of other people.

3. Penalty: "Leave!"

PUBLICATIONS.

The "Hand-Book," published in 1874, containing a full discussion of the educational question and the aims of the Institution, will be forwarded to any one desiring it.

THE INDUSTRIALIST, a weekly journal edited by the Faculty and published by the Printing Department, contains original and seasonable articles on the Farm, Orchard, Trades, Sciences, and Education. Price, 75 cents a year. Address A. A. Stewart, Manhattan.

CALENDAR.

Winter Term 1879.—Began Friday, January 3d, 1879.

TO NEW STUDENTS.

Bring the text-books you have been using. On arrival, first arrange for your boarding. A. A. Stewart, Sup't Printing Department, will furnish information, either by letter or on application, concerning boarding places or rooms for rent. Report to the President at 8:30 A. M., immediately after chapel, for enrollment.

For further information apply to Jno. A. Anderson, President, Manhattan, Kansas.

LITERARY SOCIETIES.

ALPHA BETA.—Chartered, December 26th, 1870. Meets in College building every Friday at 2 P. M. Ladies admitted. New students cordially invited to attend. W. H. SIKES, President.
MISS MARIA E. SICKELS, Secretary.

WEBSTER.—Chartered, January, 1871. Meets in Telegraph Hall every Saturday evening. Visitors, especially students, always welcome.
H. C. RUSHMORE, President.
J. N. MORROW, Secretary.

RAILROAD TIME-TABLE.

KANSAS PACIFIC RAILWAY.

PASSENGER ARRIVES.

No. 2, going East	11:14 A. M.
No. 4, going East	3:47 A. M.
No. 1, going West	5:10 P. M.
No. 3, going West	4:33 A. M.
No. 7 (freight), going West	8:15 A. M.

Nos. 1 and 2 run daily; Nos. 3 and 7 run daily except Monday; No. 4 runs daily except Sunday. Passengers with tickets are carried on No. 7.

GEO. C. WILDER, Agent.

THE INDUSTRIALIST.

SATURDAY, MARCH 1, 1879.

INDUSTRIAL EDUCATION.

The real value of an education to the student depends upon two things: First, the practical worth of the knowledge taught; and, second, the degree in which he makes it his own. Hence, the ability of any institution to give a practical education depends upon the kind and aim of the knowledge it teaches, and upon the thoroughness of the instruction therein. The State Agricultural College was directly endowed by Congress, and is guided by the State, for the specific purpose of furnishing to the industrial classes of Kansas a "practical" education, that is, "one fit for use." As its name indicates, and as the statistics of the industries of the State require, its chief work must be that of giving a useful and usable education to those who will engage in farming; and, therefore, the Farmer's Course must, from the nature of the case, be its main one.

FARMER'S EDUCATION.

Words and figures are merely instruments with which to record ideas. They are not themselves ideas, nor should they be made the chief end of an education. As a wagon is necessary to haul grain, so are they a necessary part of an education; but as the wagon is not the grain, so they are not the knowledge which the farmer converts into money. Hence, the classics and higher mathematics are not taught. But it will be noticed in the following course that so soon as the pupil acquires working skill in the use of the English language as a tool, and of figures and lines as mathematical tools, those arts and sciences which present knowledge that has a cash value to the farmer are taught as rapidly as their importance and thorough acquisition will permit. Studies numbered (1) and (4) in the second, third and fourth years are the spine of the course, to which the others are as ribs and muscle.

FARMER'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Practical Agriculture (advanced.)	1. Farm Economy, Special Hygiene.	1. Botany, Entomology.	1. Botany, Entomology.	1. Physiology.	1. Physiology.	1. Drill in English.	1. Drill in English.
2. Geology, Mineralogy.	2. Geology, Mineralogy.	2. Inorganic Chemistry.	2. Inorganic Chemistry.	2. Rhetoric.	2. Rhetoric.	2. Drill in Arithmetic.	2. Drill in Arithmetic.
3. Polit. Economy, Practical Law.	3. Polit'l Economy, Practical Law.	3. Practical Geometry.	3. Industrial Drawing.	3. Algebra.	3. Algebra.	3. Industrial Drawing.	3. Industrial Drawing.
4. Zoology.	4. Zoology.	4. Horticul., Landscape Gardening.	4. Horticul., Landscape Gardening.	4. English Literature.	4. English Structure.	4. English Structure.	4. English Structure.
5. Agricul. Chemistry, Meteorology.	5. Phys'c'l Geography, Meteorology.	5. Organic, Analytical Chemistry.	5. Organic, Household Chemistry.	5. Physics.	5. Physics.	5. Adv'd Arithmetic, Book-keeping.	5. Adv'd Arith., Book-keeping.
6. Logic.	6. Logic.	6. Practical Surveying.	6. Household Economy.	6. Industrial Drawing.	6. Industrial Drawing.	6. U. S. History, Industrial Drawing.	6. U. S. History, Industrial Drawing.

WOMAN'S EDUCATION.

Nearly one-half of our students are females, and the Woman's Course is prepared expressly for their liberal and practical education. We have no doubt whatever that practical men and women, who understand what it means and what it seeks to do, will fully endorse it.

WOMAN'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Practical Agriculture (advanced.)	1. Farm Economy, Special Hygiene.	1. Botany, Entomology.	1. Botany, Entomology.	1. Physiology.	1. Physiology.	1. Drill in English.	1. Drill in English.
2. Geology, Mineralogy.	2. Geology, Mineralogy.	2. Inorganic Chemistry.	2. Inorganic Chemistry.	2. Rhetoric.	2. Rhetoric.	2. Drill in Arithmetic.	2. Drill in Arithmetic.
3. Polit. Economy, Practical Law.	3. Polit'l Economy, Practical Law.	3. Industrial Drawing.	3. Industrial Drawing.	3. Algebra.	3. Algebra.	3. Industrial Drawing.	3. Industrial Drawing.
4. Zoology.	4. Zoology.	4. Horticul., Landscape Gardening.	4. Horticul., Landscape Gardening.	4. English Literature.	4. English Structure.	4. English Structure.	4. English Structure.
5. Agricul. Chemistry, Meteorology.	5. Phys'c'l Geography, Meteorology.	5. Organic, Household Chemistry.	5. Organic, Household Chemistry.	5. Physics.	5. Physics.	5. Adv'd Arith., Book-keeping.	5. Adv'd Arith., Book-keeping.
6. Logic.	6. Logic.	6. Household Economy.	6. Household Economy.	6. Industrial Drawing.	6. Industrial Drawing.	6. U. S. History, Industrial Drawing.	6. U. S. History, Industrial Drawing.

MECHANIC'S EDUCATION.

Because of the adaptedness of the leading course to the wants of the intelligent mechanic, it has been found practically unnecessary to diverge from the Farmer's Course. Additional studies, specially adapted to the mechanic's use, will be furnished in a Post-Graduate's Course.

If it be urged that the distinctively agricultural knowledge taught in the Farmer's Course is not directly valuable to the mechanic, we reply that, admitting the point for the purpose of argument, yet: 1. This knowledge is of more practical value to the mechanic than is the Latin, Greek, or a half dozen other things embraced in the usual course preparatory to the professions; 2. That the great majority of Kansas mechanics will also be more or less engaged in agriculture; 3. That those studies in the course which are directly valuable to the mechanic, together with the shop facilities, offer a better mechanic's education than can be elsewhere found west of the Alleghanies.

INDUSTRIAL DEPARTMENTS.

Having knowledge in the head is one thing; ability to use it with the tongue, fingers or feet is quite another thing. Both are vital to success in practical life. A man might thoroughly understand the theoretical principles of carpentry, and yet, not having used the tools, be wholly unable to earn carpenter's wages. So in all other vocations. Accordingly, instruction is given in the following well-equipped Industrial Departments, and every student is required to recite in some one of them, as selected by the pupil or parent:

FOR MALE STUDENTS.	FOR FEMALE STUDENTS.
The Farm.	Dress-making.
The Nursery.	Printing.
Carpentry.	Telegraphy.
Cabinet-making.	Scroll-sawing.
Turning.	Carving.
Wagon-making.	Engraving.
Painting.	Photography.
Blacksmithing.	Instrumental Music.

Each of these departments is conducted exactly as in daily life, and aims to give precisely the drill received by an apprentice. No charge is made, either for tuition or material, from male students taking the Industrials provided for them; nor from female students taking the ones provided for them, except in the Department of Instrumental Music. Male students taking either Printing or Telegraphy are charged $1 per month for the use of material and instruments.

DEPARTMENTS OF INSTRUCTION.

DEPARTMENT OF AGRICULTURE.

PRACTICAL AGRICULTURE.

Second Year:—General principles of breeding; history and characteristics of breeds; adaptation of different breeds for special purposes and localities; implements of simple tillage; mechanical principles involved in their construction; action of the plow upon soil and subsoil; principles of draught; influence of different adjustments upon draught; use of the dynamometer; value of hoed crops in a system of husbandry; the cultivation of corn and roots; soils that need drainage; how to lay out a system of drains; house drainage; sewerage.

Fourth Year: General view of agriculture, ancient and modern; agricultural progress of the last century; relative advantages of mixed husbandry and special farming; the selection and arrangement of the farm with reference to the system to be pursued; rotation of crops; general advantages of a rotation; the best rotation with reference to disposition of labor, production of manure, and extermination of weeds; pasturage and production of grain and forage crops; manures, how best housed and applied; composting manures; commercial fertilizers; systems of feeding; stall feeding; steaming food; soiling; experiments in feeding; farm buildings; farm-houses; barns.

FARM ECONOMY.

Woman's Course, Fourth Year: Dairy products as human food; influences affecting character of milk; manufacture of condensed milk; the factory system and household plan of cheese-making; treatment of rennet; general process of cheese manufacture; subsequent t eatment of cheese; butter-making; creameries; "deep" and "shallow" setting systems; general process of butter-making; packing and preserving butter.

DEPARTMENT OF BOTANY AND PRACTICAL HORTICULTURE.

This department embraces a course of instruction in the elements of botany, structural and systematic, with a constant attention to the practical application of botany to the farm, orchard, garden, nursery and forest; also a course of lectures on Landscape Gardening. The instruction is mainly given by lectures, accompanied by regular practical drill in all the work of the fruit, vegetable and flower gardens, nursery, orchard, vineyard and ornamental grounds.

The lectures in Practical Horticulture embrace the following and kindred subjects: The relation of atmospheric motion, moisture and temperature to horticulture; seeds, the means of collecting and preserving; propagation, by seeds, cuttings, layers, suckers, grafting, budding; care of young plants; improvement of varieties; management of commercial and farm nursery; modes of pruning; the orchard; fruit suitable for orchard and garden culture; the flower, vegetable and fruit garden; importance and mode of forest culture; shelter belts and their influence; weeds and useful plants; noting the species of trees worthy of culture, either for profit or ornament.

LANDSCAPE GARDENING.

The lectures on Landscape Gardening not only unfold the accepted principles of the art, but at the same time give special attention to such applications of the art as may be made universally available in laying out and improvement of farms and the homes of the people. These lectures are accompanied by a practical drill in in the work of laying out and plotting grounds topographically.

CHEMICAL DEPARTMENT.

PHYSICS.

This includes a full consideration of the laws of mechanics, of liquids, gases and vapors, weights and measures, and specific gravity, followed by experimental study in the Physical Laboratory of the laws of heat, light, with spectrum analysis, electricity and magnetism, and the relation of these forces to plant and animal life. Text-book, Ganot.

INORGANIC CHEMISTRY.

This course is opened with a careful study of chemical forces and the laws governing chemical combination. The elements, with their compounds, are next considered in succession as to their history, properties, manufacture, and especially with regard to their uses on the farm and in the arts. These lectures are accompanied by an extended course of laboratory practice in which each student performs every experiment with his own hands. Text-book, Eliot & Storer.

ORGANIC CHEMISTRY.

This comprises a thorough study of the chemistry of the organic compounds, the composition of plants and of the various compounds derived from them. Constantly accompanied by laboratory practice.

CHEMICAL ANALYSIS.

In this course each student is furnished his stand in the Qualitative Laboratory, completely furnished with apparatus and chemicals for his own use. He here performs analyses of farm soils, plant ash, commercial manures, ores, mineral waters, commercial compounds, etc. After completing this course, he enters, if he desires, the Quantitative Laboratory, where he pursues a full course in quantitative analysis. Text-book, Kedzie's Manual.

AGRICULTURAL CHEMISTRY.

This includes a thorough consideration of the application of chemical principles to the economy of the farm; the origin and formation of soils; the classification and composition of soils; the analysis of soils and their adaptation to purposes of production; the composition and use of manures; composting; chemistry of farm operations, such as plowing, fallowing, draining, etc. Text-book, Johnson's "How Crops Feed."

METEOROLOGY.

Embracing the composition of the atmosphere; atmospheric pressure; temperature and humidity; laws of storms; rain, snow and atmospheric electricity. A full course in meteorological observations is taken under direction of the Signal Service. Text-book, Loomis' Meteorology.

MINERALOGY.

This includes the study of the laws of crystallography, with the properties, forms and uses of the principal minerals of the United States. Blow-pipe analysis forms a very important part of the course, each student being required to name and identify a large series of minerals. Text-book, Dana's Mineralogy.

HOUSEHOLD CHEMISTRY.

A course of lectures on this subject is yearly delivered to a class of young ladies. The course embraces the chemistry of cooking; the composition of food; bread; tea, chocolate and coffee; butter and milk; ripening and preservation of fruits, etc.

SPECIAL COURSES

Are constantly in progress in Assaying, Pharmaceutical Chemistry and Photography.

ENGLISH LANGUAGE.

Words are simply tools used to express ideas; and, since the vast majority of our communications are made by the employment of spoken or written words, skill in using them is as profitable to the industrialist as dexterity with the needle is profitable to the seamstress. The direct aim of the course is to make the student skillful and intelligent in handling the machinery called language, just as an engineer handles a locomotive; and no drill will be omitted, or effort spared, to gain this end. Apart from the course itself, which is far more practical and complete than that usually found in literary colleges, the constant attention given this subject by all the departments, and especially the practice required in the printing classes, affords superior advantages to the student.

DRILL IN ENGLISH.

"As grammar was made after language, so ought it to be taught after language."—*Herbert Spencer.*

Drill in English embraces the following topics:

Sounds of the language; drill in producing the vocal, sub-vocal and aspirate elements with accuracy, distinctness and volume; vowels, consonants.

Letters: Form; power; rules for spelling, drill.

Words: Signification, properties, modifications, variations, relation and dependence.

Sentences: Drill in statement of ideas; description, clearness, terseness, vigor; business letters, discussion; capitalization; syllabication; punctuation; construction and analysis of sentences; elements, uses and names; criticism of compositions printed as written; proof reading; grammatical construction; superfluous words and clauses; drill in reading, speaking and penmanship.

Text-books: Webster's Academic Dictionary; Lee & Hadley's Advanced Lessons in Language.

Pupils deficient in spelling, etc., should enter the printing class, the printing-office being the work-shop of language.

STRUCTURE OF ENGLISH.

ELEMENTS OF WORDS.—The end aimed at in this study is to learn everything about words which will aid in their effective use. Among the topics included are:

Roots: What are they; their origin; their force and value as an element of language; the manner of their growth into different parts of speech.

Stems: Their derivation; their offices and properties; their relation to other parts of words.

Prefixes and Suffixes: The several sources whence derived; the relation of their force or significance to those sources; explanation of the laws and principles governing their use along with stems.

Compounds: Their value; their properties and uses; the laws governing their formation.

Synonyms: Definitions; causes of their abundance in English; the principles to be observed in choosing among them, to express a thought.

Criticism: This constitutes a prominent part of the exercises of the pupil through his whole course in the study of English. It not only diversifies and enlivens the class-room exercise, but reduces to practice the principles of the structure of the language. By this means, the student acquires not only a knowledge of English, but readiness and accuracy in speaking or writing it. The exercises in criticism embrace not only examination of selected matter, but original composition.

ELEMENTS OF SENTENCES.—The purpose in view in studying this subject is not to traverse the ground gone over in the study of grammar, but to fix in the mind of the student a clear understanding and remembrance of names, the properties and offices of the several classes of words entering into an English sentence, by showing him the reason of things; to make more simple, as well as interesting and practically useful, a study otherwise "dry and unprofitable" in many cases, by explaining the reason of the verbal forms and changes, the rules and maxims he is to remember and observe in his use of language. In the same manner he is conducted through a study of the mutual relations and dependencies of the several elements making up a sentence.

MATHEMATICAL DEPARTMENT.

Figures and lines, like words, are only instruments with which to convey ideas, or perform operations that cannot be easily done without them. The arithmetical principles used in business are few and simple; but accuracy and rapidity in computation are only gained by practice. College graduates often fail to retain clerkships, not because they do not know *why* given operations are performed, but because they can neither add, multiply or divide with that habitual correctness which renders their work reliable.

DRILL IN ARITHMETIC.

The chief design of this study is to make the student expert in the use of numbers, as employed by the industrialist for profit. The occupation of a successful farmer demands the application of every principle of practical arithmetic, and is taken as a starting point, rather than that of an abstract system. Beginning with a simple cash account, book-keeping is gradually developed to the full extent of its real utility. The areas of fields, expense of crops, construction of houses, sales of produce, and investment of capital, involve all the fundamental operations, and those of profit and loss, commission, taxes, insurance, exchange and stocks. Following this line, the student, so far from hammering away at "pure" science draws from the mathematical store-house what he needs, and sees why he needs it. Accuracy of calculation and posting, rather than a *mere* comprehension of the principles, is aimed at. Besides the recitation-room drill in business forms, practice in the field is also given. Estimating the number of cords in a pile of wood said to be 100x4x4 feet is one thing; measuring a pile of wood through which any number of cats may be harmlessly thrown, and in which four-feet sticks are the exception, is quite another and more difficult thing.

ARITHMETIC AND BOOK-KEEPING

Is a continuation of the above, having the same purpose and adopting such methods as the necessities of the class indicate. Thorough instruction in the principles and forms of business law is given. It will be seen that this method of teaching book-keeping, besides ensuring arithmetical practice, develops practical skill in that important art.

ALGEBRA.

Algebra is included in the course as a preparation for the study of Surveying.

DRAWING.

The practical value of Industrial Drawing can hardly be overestimated, first, because its study is the best drill for the development of the perceptive faculties, which are the ones most employed in daily life; and, second, because the working classes make a far greater use of lines than they do of figures. A farmer follows a line when laying a straight furrow; the carpenter uses the square and rule twenty times as often as he does figures; and a woman in cutting a pattern, or deciding that one bonnet is prettier than another, does so by the line or "form." So that either in its direct application, or in the exercise of that taste which comes from skill in using lines, this branch of mathematics is quite as important as a means of "mental discipline" as is the branch of computation, and is of far greater daily use. The admiral system of Prof. Walter Smith, Art Director of Massachusetts, is thoroughly followed through the grades of Free-hand, Geometrical, Object, Model, Perspective, Mechanical and Topographical Drawing, during the terms indicated by the Course of Study. In addition, constant practice in the application of lines to metal and wood is furnished in the Blacksmith, Carpenter, Turning, Scroll-sawing, Carving, Engraving and Printing shops, and to fabrics in the Sewing Department.

PRACTICAL GEOMETRY.

Not one farmer in a thousand ever uses the transit in surveying his land, the testimony of the county surveyor being decisive in court; but every farmer makes countless applications of lines and angles in laying off fields, roads, gardens, planning houses, determining levels, etc. The object of Practical Geometry is to teach the properties and uses of angles, and to make the student skillful in the application of lines to the field by the use of such simple instruments as are always within reach, or within his ability to construct; and accurate in the transferring of plans to the grounds, board or block.

PRACTICAL SURVEYING.

The drill in the use of figures and lines given by the mathematical course as above indicated, renders the mastery of surveying an easy task. There is no calculation made or formula used by the working engineer which cannot be readily understood and performed by a skillful arithmetician after proper instruction. The hand-book of the engineer is accordingly supplemented with such special guidance as is found necessary for a full comprehension of the mathematical principles and their applications; and extended field practice is required in the use of the compass, level, transit and theodlite.

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The Breeding of Short-Horns, and Remarks as to the General Management of Pure-Bred Stock.

[A paper read, by Wm. Watson, of Junction City, before the Central Kansas Breeders' Association, at the Agricultural College, Saturday, March 1st, 1879.]

So long as Short-horn breeding was mainly in the hands of men whose rent and profit depended upon the produce of the farm, there was little danger that the attention of breeders would be diverted from a practical object. But now it has become a fashion and a fancy. We sometimes meet with people who are well versed in the intricacies of Kirklevington relationship; and as often, probably, with those who have made Killerby and Warlaby pedigrees their special study. The difficulty is to find lovers of Short-horns sufficiently inquisitive to extend their researches beyond the particular group to which they give their adherence. It is probably no exaggeration to say that the generality of Short-horn breeders are unacquainted with what is contained in the genealogies of the larger portion of the breed. Their attention, indeed, to the remoter antecedents of even their own special favorites, often appear to have been imperfect. If the majority were better grounded in the rudiments of their subject, should we not see a more just recognition of the merits of many sorts now too much neglected?

THE CURSE OF FASHION.

There is yearly, I maintain, a great national loss, an immense waste of properties and power, that might be made available for the general improvement of farm stock, owing to the contempt that has grown for pedigrees free of fashion. How many a good cow or heifer, the constant attendant at sales must have noticed going into careless hands, to become the dam of inferior stock, just because her pedigree don't "read well." Yet, if that pedigree were impartially searched, it would prove rich, perhaps, in ancestors of noble character, whose distinguishing merits, inherited by the unfashionably-bred descendants, might be perpetuated and transferred to any sorts that lack them.

For example of the use that fearless breeders have made of specialties, it is needless to go farther than to mention two or three familiar facts. Fifty years ago, the Rev. Henry Berry saw in a heifer of Sir John Ramsden's a depth and fullness of twist (between the rounds and over the udder) that he greatly admired. He bought the heifer (Actonia), and from her bred animals excellent in at least one point that is too much neglected.

More than sixty years ago, Mr. Richard Booth saw, in the cow by Burrell's Bull, the fore flank (that is, the cushion of flesh behind the shoulder,) he wished to engraft in his own herd. He mated her with Agamemnon; the offspring, White Cow, with Pilot; and the result was, in Isabella, a fore flank of enormous substance, which, by intermixture of his families, he got into the whole of his herd. This, again, was very strongly developed in her descendant, Bridecake; and Mr. Bolden, by using Prince Imperial, a son of that cow, decidedly improved the fore flank of the present Duchesses.

Forty-five years ago, my old friend, Mr. Bates, seized the head of Belvidere, with all its meaning of vigor and activity, and made the properties of Belvidere, head and all, eminently notable in his herd ever afterwards.

So it was, indeed, some ninety-five years back, a timely perception of special excellence of Hubback, that gives us, may I not say, the largest improvement known in the history of Short-horn cattle. And so, moreover, to Mrs. Charles Colling's determination to secure for her husband's herd the addition of Lady Maynard, we owe the existence and helpful influence of Favorite (252).

It is, I apprehend, the prevalent indisposition to treat Short-horns as Short-horns, the tendency to prize some particular formula of descent, to the exclusion of other orders, that mainly causes the waste to which I have alluded, and hinders men from following the example of the breeders who founded, and the breeders who have preserved, the improved Short-horns.

MATURED SIRES.

Gentlemen, let me draw your attention to sires. We often find the influence of a remarkably good and impressive bull coming out in full vigor, when we unite his descendants. This fact, I think, must have struck every one who has been long, attentively and thoughtfully acquainted with the breeding of Short-horns, or any other reliable breed. Is it not true that the merits of some of the best sires that have lived have not been fully recognized until the animals have been put away? Even by eminent breeders, the great superiority of the stock of certain bulls has passed unnoticed until the offspring arrived at ripe maturity, when, probably, the sire was past further service, if not already sent to the butcher.

THE BREEDER'S JUDGMENT.

Let us own that while a naturally quick eye in full practice can pick out a promising young animal that an untried one would fail to admire; and, while another can detect qualities that the ordinary hand is unable to perceive, there is no extra gift in the art of handling Short-horns. By far the most enviable and least easily-acquired faculty of a stock breeder is that, which but few men pre-eminently have possessed, of knowing how to mate their animals, recognizing by something like intuition the fitness of similarity and of dissimilarity.

In my youth it fell to my lot to be associated with several of the most eminent breeders and maters of the last generation. Among them was the late Richard Booth, of Warlaby; his hospitable brother, John Booth, of Killerby; Bates, of Kirklevington; John Maynard, in all his glory; Wm. Wetherell, the great Nestor of Short-horns; the far-seeing Wm. Torr, of Aylesby; and last, though not least, my father, the late Hugh Watson, of Keillor, the great improver of polled Angus cattle. All these were men who had the innate faculties which could turn opportunities and endowments to good account, besides their teeming brains and the resolution to carry out a still rarer instinct. They had the power of determining, at a glance, what to *dwell on* and what to *get rid of*, which is amongst nature's greatest gifts to a breeder. Often have I asked them for the reasons for methods pursued. They would answer me, "I cannot say, but this much I do know, that the result *will be right*;" and invariably it was right. Gentlemen, might not this right result be more often obtained if breeders would remember that they are dealing with an improved breed, liable to reversion, yet capable of maintenance in its improved state, and of still progressive improvements?

PEDIGREES.

Too much attention nowadays is devoted to pedigree,—pedigree only,—laying aside the constitution, character and formation of the animals, and failing to insure that for which pedigree is valuable. The registration of Short-horn pedigrees is recognized as an inestimable boon to the Short-horn interest, and the herd-book as the most serviceable directory; but its uses most certainly are misapplied, if we make it only a pattern-book of pedigrees.

The perceptible ebb and flow of merit in the various lines of Short-horns, in the course of their history, should demonstrate the necessity of attending mainly to the personal qualities of our stock. The more ought we to be impressed with this, when we compare—shall I say—the inferior stock that are bred from fashionable animals with the produce of the good old, reliable, beef-making sorts.

WORTH MAKES THE SHORT-HORN, SIR!

Personal qualities alone make the breed serviceable to the country; and, for a commercial speculation, any other system of breeding must fall, sooner or later. No sort can long hold the market, after loss of the special characteristics that gave it popularity. How seldom do we see equality of merit retained in one direct line through many generations.

Short-horn families, between the elevating power of care and keep and the reverse influence of their unimproved origin, are constantly fluctuatiug between the extremes of improvement and of degeneracy. From old tribes in which deterioration has begun, the very finest new sorts may be extracted. We occasionally see a new and vigorous sort springing from the fag-end of a stock outworn. Mix a little of the old with some fresh, healthy blood, and the ancestral improved forms reappear. Sometimes we see the old tribes themselves arrested in their decline, by the bold admission of fresh elements; but it requires a master to do this. An unfortunate experiment hastens their destruction.

A judicious variation in the use of old material may, in certain cases, effect all that could be gained by the addition of new. Families from one origin, say, diverge, and are kept asunder until, in course of time, they are virtually strange to one another, so that the renovating effect of a cross is obtained by their reunion, although the amount of really fresh blood—if any be present—may be trifling.

A LUCKY HIT.

Still there is another mode of breeding that produces almost unaccountably perfect excellence. Now and again, that is by the jumbling together of any sorts that come to hand, without any other reason than ignorance or indifference. One has felt almost astounded on seeing the style, hair, form and flesh of some animals, the produce of most ordinary parents.

It may be that some accidental mixture has proved a hit; but I need scarcely repeat that the lucky hit is not to be trusted to reproduce its superiority. Now we have so much well-descended stock, possessing personal excellence of a high degree, that, for those who desire a high place among breeders, it would be foolish to waste time in beginning afresh from unimproved animals, when they have more trustworthy material ready-made. We may more prudently make our established sorts increase and multiply, and aim to improve them. The building up of new families, by the use of improved upon ordinary stock, is quite another matter from the careful preservation of the old sorts.

Still, while the necessities of the country urge the improvement of our stock to the utmost possible extent, we must take care not to dilute too freely our older strains of Short-horn blood. We have plenty of long-established varieties, and at their foundation we have quite as many brindles and black noses as are desirable.

BLACK NOSES.

We say these brindles are a long way off. So they are, in point of time; but how often they recur. You count up the generations, and find that perhaps eighteen or twenty occur between your cow or bull and the mellow handling Foljambe, with his dark face. Again, tabulate their pedigree, and see how often they are descended from Dalton Duke, a brindled, red and white bull, or from Richard Barker's bull ("Dicky Barker's Blacknose"); to say nothing of grandson of Bolingbroke, with his Galloway polled grandmother. It is clear that, if the Short-horns sprang from a mere handful of cattle in Teesdale and the neighboring parts of Yorkshire and Durham, those that are eight, ten or more generations in descent from the Teeswater stock, must be repeatedly descended from the same animals; so that chances of stain from dark muzzled animals are multiplied. Suppose we determine to eradicate from the Short-horn breed those stains which still bear testimony to the early mixtures: at what an immense sacrifice it would be done. Animals showing the stains might be usefully turned to account on the improvement of common stock; but to effectually purge the old tribes of those ills that Short-horns are heir to, would be to weed out unsparingly everything that outwardly manifests the blot.

THE SHORT-HORNS AS MILKERS.

The aptitude of Short-horns to milk deeply and lay on enormous weights of beef, are upon record, to the credit of the earliest Short-horns. These doings brought the breed into general notice; and for these properties the Short-horn was sought and bought by breeders of different countries. What a grand array of breeders America has produced, from the Kentucky importation of 1817 up to the present day.

In breeding Short-horns, I would pay the utmost attention to their milking qualities. If rightly managed, they are eminently qualified for dairy purposes. How few judges, how few breeders, of the present day make the udder an important object. I have seen many prize-winners, in breeding classes, which scarcely seemed qualified for competition, if all we have a right to require of a breeding cow or heifer were duly considered;—a cow, for instance, that evidently, and from the smallness and deformity of her udder, could not possibly give more milk than a ewe. Think of the destruction of useful qualities that must follow, if the son of such a cow went into a dairy district, or even into a good herd out of which, from a good milker, a dairy stock breeder selected a bull.

THE BREEDER'S IDEAL.

In the selection of your bull, you must ask yourself, what is your standard? what is your type? A good reply would be that given by Mr. Wm. Housman, of Short-horn fame. He says: "I must say that, right or wrong, my preference is for a neat, clean-shaped, somewhat gay-looking, medium-sized cow.; and a bull, strong in the horn, with a short head, broad across the forehead, the horns set well back; and, in addition to the everywhere-recognized desiderata of form and flesh, I would have verily a round of beef on his neck. If told that we don't want beef grown there, I say it is not value per pound we are dealing with, but the character of a male animal." This is the *sire* we have before us now,—not his emasculated sons, which will be none the less level as steers, nor the less massive in roast

beef parts, because their father was a true specimen of his sex in its natural perfection. Neither will his daughters be coarse because he is powerful, but the reverse. Let us see, however, in male and female, a clear throat: in the bull, the muscular development kept well back from the joining of head and neck; in the cow, something of elegance, almost amounting to lightness where the head and neck join — not further back. A fold or two of loose skin, as a matter of eye-pleasing, in either sex, is more than permissible, I fancy: is it not desirable? We do not want that lightness, that excess of refinement, which makes Short-horns "horse-headed."

THE WORLD THE SHORT-HORN'S EMPIRE.

Of late years, Short-horns have spread over large areas, in various parts of the world; and are yearly making inroads into fresh countries. Austria and New Zealand have been long in the Short-horn interest. Fashion there has comparatively no sway. All sorts of distinct or of miscellaneous breeding that can establish a claim to public notice, on the score of merit, are eagerly bought. Australians make fashions of their own, and are never led away by color. This being the case, they improve their beef cattle far faster than you do in America, where light-colored bulls are discarded, no matter how many their good qualities may be. In America, if a bull is red, he is put to service, although he may not have one good point to recommend him. This is much to be deplored.

When we find Short-horns thus brought into world-wide notoriety, and consider the immense and growing demand for them in many lands, it is surely incumbent upon the Short-horn breeders of that country which would command foreign custom, to inquire whether or not they are acting in the right way to maintain a reputation as producers of the choicest stock.

SHORT-HORNS NOW AND THEN.

A question is often asked, Are the Short-horns of the present day, as individual animals, equal to what they were thirty or forty years ago? I am not sure that, if we could compare the best cow of to-day with the best cow of either of the two dates above mentioned, we would not find some degree of decline. Since the days of Necklace and her twin sister, Breastplate the perfect, Mantalina, sweet Faith and Hope, Mr. Crofton's Rosie, and many others I could mention, I think I have seen nothing to compare to them, except Lady Grateful, Lady Fragrant, and the grand old Rosedale, — all Booth animals. Yet there is one reflection, a little reassurance for those so disposed to think that we cannot match the cattle of our fathers or grandfathers. It is, that when great merit was scarce, greater merit would stand out in bolder relief; and, moreover, when men are young, they look upon things with stronger and more eager admiration than they do when in the later years of life.

IN-AND-IN BREEDING.

With regard to the vexed question of in-and-in breeding *versus* mixing, I am sure that no hard or fast line can be drawn. Admirable animals may be bred both ways, have been and are repeatedly bred both ways. Mixing, or mating, may be done so well, in the hands of a first-rate judge and skillful breeder, through the selection of animals personally suitable to one another, that the results are as constant as those of the most judicious breeding within one tribe; and, on the other hand, alliances of near relations may be so badly assorted as to prove worse than alien alliances. There is indiscriminate mixing, and there is indiscriminate in-breeding. Suppose the effects of the two errors appear equally bad, those of the latter are really the worst, if it is true that close in-breeding intensifies hereditary potency. But, again, we may assume, as a rule, that an unskillful breeder is less likely to make mistakes in uniting animals of kindred blood than in bringing together sorts differently derived and descended.

We find that the work of the Collings brothers, and many other eminent breeders of the early days, was spent in collecting, sorting and interweaving. They evidently did not consider that one man had the best breed of Short-horns; but they saw that, by scouring the country for the best that each man had, breeding from unions of the best, related or unrelated in blood, and then mixing again and again the pick of their own herds, discharging the misfits, they could breed animals surpassing the best that had been previously produced. Laying broad foundations, they built; and on that same system, gentlemen, you too must build, if you look for success.

About Mr. Bates, so much has been said and written that for me to say more of him would be out of place. Occasionally, he took a cross which might be said to be a violent one; but in each case analysis shows sufficient affinity to take the chill off. He then worked in-and-in again, with all his might. This same system is equally forcible in respect to the principles observed by those most eminent breeders, the Messrs. Booth; and also by the late Wm. Torr, of Aylesby.

THE BOOTHS, "TOMMY BATES," AND MASON.

Although I lean to the Booth families, still there has been a large measure of success attending both Bates and Booth. It is by studying, impartially, the comparative results of various methods of breeding that we are best able to gain the knowledge necessary to further success. Were I to start a herd of Short-horns now, I would choose the Mason stock as a grand concrete foundation, with plenty of the Warlaby or Killerby element in the foreground. For several years I had charge of a pure Mason herd, under the celebrated Captain Barclay, of Ury, Scotland; and, to this day, I have never seen a finer herd. They were great grazers, immense weights, and iron in constitution. I also had them in New Zealand; and they were the best animals I had, in a large herd. At Durham Park, Kansas, there are some remarkably good specimens to be seen, well topped with Booth. Oh, that Booth! From an injudicious cross in the Ury herd, by introducing the 2d Duke of Northumberland, the herd was almost ruined, from black noses. Black and smutty noses were very prevalent at Kirklevington, in those days. Never did I see one in the herds of the Booths.

But, to return to line breeding. However much truth may be found in it, it has unquestionably a tendency to the system of exclusiveness. This was not the system by which any of the greatest improvers have effected their greatest improvements, except temporarily, in the very early stages of the work. The concentration of power by in-breeding is allowed to be greatly favorable to hereditary constancy of type, and to special instances of remarkable impressiveness or individual prepotency; while the occasional introduction of fresh material sustains the vigor of an in-bred tribe: and, if the material is of a suitable sort, the introduction, in small proportions, neither destroys nor impairs the type.

GRADES.

In breeding grades, I would say that the best advances are made by continuous use of sires representing some one tribe, until the special characteristics of that tribe are established. At least, there should be a similarity of type; and I, for one, would prefer blood relationship. I refer to this, as I see several gentlemen present who, I am aware, are largely interested in the raising of grade stock.

My friends, three things are necessary for success in Short-horn breeding; viz., blood, feed and comfort. Omit one of them and you will fail. Niggardly keeping, for several consecutive generations, will undoubtedly curb the generous tendencies which selection and liberal nurture have induced, and, at length, destroy them. Over-forcing ruins the constitution, causes diseases, and often destroys fertility. Under either extreme, the most sagacious judgment in the choice or mating of animals would be exercised in vain.

HOW THE BLUE RIBBON IS WOO'D AND WON.

Before I conclude, gentlemen, if I have not trespassed too long on your time, I would like to say a few words in regard to the selection and preparation of animals for exhibition. Of course, I need not tell you that it is your best animal that is wanted to win a prize, in these days of advancement. Let him be docile, even intelligent in expression; if a Short-horn, let his horn be waxy, free of inkiness at the point. Let his nose be much the color of new copper, free of all darkness or smut; his neck moderately short; full in his neck vein; prominent in his bosom; his shoulders oblique and beautifully laid in, with smooth shoulder points; capacious in the chest; rotund and well sprung in his ribs; strong and thick-fleshed loins; deep and heavy in his flank; huggins, or hip bones, smooth and well covered; lengthy, well-packed quarters; deep in his twist; straight on his legs, and these well outside him; light in offal; and fine in bone. There, now, you have a prize-winner.

THE TRAINING.

So far as feeding is concerned, suppose the animal to be either a cow or bull that you intend to exhibit, you must not suppose you can get him into the state of perfection that is now necessary, with say two months' training. You must commence your work at least six months before the time required; and if longer, so much the better. The food best adapted for that is roots, sound millet, clover, or oat hay, and, I need not add, a liberal allowance of corn meal and flax-seed cake; and let them all be of the very best quality. Slice the roots and mix them with the meal and cake. Do not let the roots exceed eight pounds per day. Too many of them are apt to make your animal "paunchy," which I consider a great eye-sore in the fair ring. You can raise the oil cake to say twelve pounds per day, and the meal in proportion. Water frequently, or, what is better, have it always beside the animal: then they will never drink too much at a time, to extend their stomachs. If you can afford to give your animals milk instead of water, so much the better: say three pails full a day.

Be very particular as to exercise, and keep the cattle's feet in good shape. Let them have from three to four miles' walk daily, so as to insure health, while they are in almost an artificial state. After your fairs are ended, be most careful how you reduce the animals. Do it slowly and cautiously.

CALVES.

So far as the preparation of calves for exhibition is concerned, I have found it to be the best system to allow them to suck their dams for four or five weeks. After that age there is little danger of white scours. I then commence hand feeding them from the pail. In a couple of days, a handy man will make them take to it. Through the pail, you can make the quantity, quality and time to suit you. You can enrich the milk as much as you like, by the addition of cream, and carry on the system of pail feeding to any age; which is an immense advantage where you mean to continue the animal as a show one. Beautiful calves can be made by nursing; but it may be when they are six months old, they will wean themselves,—just at the time when they require most forcing. Teach your calves to eat meal and flax-seed cake at as early an age as possible; also, supply them with a few roots. In addition to abundance of rich milk, if you want to make them into something extraordinarily good, pour the best quality of flax-seed oil over everything they eat, even over their flax-seed cake: then you have them, sure.

Both for old and young animals, always use crushed cake in chunks, in preference to the meal. The chunks they chew and mix with their saliva; the meal they do not. This is a hint I got from the late Richard Booth, of Warlaby, thirty-five years ago; and I have seen the good effects of it ever since.

Gentlemen, under such treatment I have brought out some of the best animals ever exhibited. Have been most successful with them in England, Scotland, Ireland, France, New Zealand, Australia, as well as in my adopted land, America. So, as I have told you some of the leading secrets of preparation, I say, Go ye and do likewise.

THE INDUSTRIALIST.

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E. M. SHELTON, Managing Editor.

ASSOCIATE EDITORS, MEMBERS OF THE FACULTY.

Grafting.

Each seed contains a germ, or embryo, which is a little undeveloped plant; and each bud is an undeveloped branch. Every bud (not fruit bud), if developed, will make a branch, which will have exactly the same individual characters of its own kind. A scion that we cut from a Winesap apple-tree will have several buds on it; and each of those buds, if alive and put in such circumstances as to cause it to develop, will make Winesap branches, buds, flowers and fruit, in due time. Some kinds of plants are of such a nature as to admit of no such rough or surgical treatment as to have their branches and buds taken from their natural positions and grafted on another tree, and continue to live.

When a cut or wound of any kind is made in any part of an animal or plant, if not severe enough to cause its death, the vital action of the living organism begins at once to heal the breach. This healing proceeds much in the same way as ordinary growth; that is, by the formation of cells. All of us have very often seen this done in a living tree, when it has been cut, or a branch broken. The new growth keeps covering the wound until it finally may be entirely hidden. When scions or roots are taken from many kinds of trees, of which the apple is a very good example, they will, if kept in a damp and moderately cool place, soon shows signs of this cell-growth, wherever the cambium (which is that tender part lying between the bark and wood) has been laid bare or crossed with the knife. The cells protrude from the wound in a sort of whitish, tender mass, which is called callus. If the ends or cut surfaces of two such scions, or a root and a scion, are put closely together, the callus part will grow together by means of these rapidly forming cells.

Such an operation as the above is called grafting. Hence we see that one who wishes to graft successfully must know how to place those parts together that will form the callus, and so secure them from the drying influences of the air as to retain their life and healthful action. He must also know what kinds of stocks and scions will graft together. Those which have cells of a very different nature will not interlock and pass the living sap from cell to cell. The kind of sap in the peach tree is not the same as that in the apple; nor are their cells alike; nor will they graft together. The pear and the apple are nearly alike in their natures, and will graft; although, being somewhat different, will not make a good union. The same may be said of the peach and the plum, and of many other trees and plants. Some will graft better than others, and some not at all. Who would think of trying to graft the apple upon the oak, or the maple upon the pear? They are too much unlike in exterior characters to lead one to think they would graft; and the microscope would prove the same true of their cellular formation.

There are many modes of grafting. They vary with the different kinds of stocks and scions we have to work with. Root grafting is a term applied to the art of grafting scions of various kinds upon young seedling roots. It is done in a cellar or grafting room, and usually during the months of January and February; although it may be done at any time in the early part of the winter, after the roots are taken up, and as late in the winter as will give time for the callus to form before they are set out in the open ground the next spring. For this, two or three weeks are usually needed.

One of the necessary preparations is waxed wrapping thread. Very small cotton thread is best — such as is about the size of coarse sewing thread, but very loosely twisted. It is called three-ply cotton; may be bought in skeins at twenty-five cents per pound. If this kind is not easily obtained get the smallest-sized knitting cotton, or a poor quality of spool cotton. The thread is wound upon large, wooden spools; corn cobs with the pith punched out do well as a substitute. Put the spool, thread and all in melted grafting wax, which should be very

hot. Let the thread become thoroughly saturated, and when taken out and cooled it is ready for use. The spool may be suspended overhead or in a frame on the table, by passing a large wire or small stick through it, so that the thread may easily unwind. A bundle of seedlings, or roots, as we call them, should be placed upon the table of the grafting room. If dirty or sandy, they should be washed, that no grit may be on them to dull the knife.

The very small side roots should be trimmed off, as they are of no value in the present case. Cut off the top of the stock, or that part which grew above ground, as it useless. The root may now be cut in pieces three inches long. There is difference of opinion on this point, but nearly all agree, from experience, that this length is sufficient. Experiments have proven that two-inch sections are about as good as longer ones, and even those one inch in length do quite as well. There is also a theory that the only proper place to graft is at the collar, or top, of the root, but myriads of cases have proved that the second cut is as good as the first; and, if the root is strong and large enough, the third cut is equally good. It is seldom that a one-year-old root is long enough to make more than three good cuts.

The scions are cut into sections about five inches in length. Begin to cut at the butt-end of the scion, and watch closely for signs of diseased or damaged wood, which may be seen first by the dark-colored pith. Throw aside any part that is not healthy. Be careful to cut each section about one-fourth inch above a bud. When a convenient number (about fifty) are cut, all is ready to graft them.

The method called whip or tongue grafting is the most approved, and used by root-grafters. Figure one illustrates this method. To perform this, make a sloping cut, with a very sharp and thin knife, one inch long, across the entire thickness of the butt-end of the scion. Make a split one-fourth inch deep, parallel with the sloping cut already made, beginning on its surface, a little to the butt-end of the middle. This makes a tongue on the sloping surface. Make a similar slope and tongue on the top-end of a root. These may now be fitted together, the tongues fitting within each other. Select roots and scions of corresponding size. By having a number of each before the eye, already prepared, this can be easily done. Wrap securely with the waxed thread, so they will remain closely united. The benefits of the wax is that it holds tightly without being tied.

Fig. 1.

The grafts should be tied in bundles of about one hundred each, plainly marked, and packed in damp sawdust in a cellar, or some such place. As soon in the spring as the ground can be worked, the grafts should be set eight inches apart in rows about four feet apart. About one inch of the tops should be left above ground, and the earth should be firmly packed against their lower parts. Good, clean culture should be kept up constantly until about August 15th. If cultivated late in the season, the trees are apt to be injured by the first severe, freezing weather, because of late, sappy growth.—*H. E. VanDeman.*

THE idea of usefulness is the kernel of well-nigh everything written and said now upon the general subject of education.

THE INDUSTRIALIST.

SATURDAY, MARCH 8, 1879.

President Anderson is expected home this evening.

The thermometer "tipped the beam" at 92° yesterday. Go and buy an Ulster.

The Farm Department desires again to say that the last of the fall crop of Berkshires has been sold.

We notice that plowing has already begun in the Horticultural Department; and on the Farm the stalk-cutter is rapidly fitting the corn-stubble for the same process.

The orchard-grass on the College lawn has made a vigorous start already. Should we be favored with two weeks more of th is mild (?) weather, the frisky bovines will be invited out.

The Farm Department has recently made sales of breeding animals as follows: To W. A. Hopper, Cawker City, Kansas, one Berkshire sow; to A. W. Gowan, one pair of Berkshire pigs.

The College farm still offers a number of valuable bulls of the Short-horn, Jersey and Galloway breeds, and at very low prices. For instance, a five-year-old Galloway, price $75; a yearling Jersey, $50.

Despite the disagreeable weather, the attendance at the meeting of the Central Kansas Breeders' Association was good. We were glad to notice a goodly number of students present, and several gentlemen from abroad.

The monthly reports of the State Board of Agriculture, down to January 1st, have been received. These reports are of very great value; for, besides showing the true present condition of Kansas agriculture, they are full of valuable suggestions for the future. We hope to have room for extracts from these ere long.

We had a pleasant call, on Saturday last, from Hon. John Davis, of Junction City, who, with Messrs. A. P. Trott and R. Duncan, attended the breeders' meeting held in the College that day. We question if Bro. Davis was ever able to resist the temptation to be present at a meeting for the discussion of farm topics. Come again, gentlemen.

We devote a large portion of our space, this week, to Mr. Watson's lecture on stock breeding. Coming, as this does, from one who has had great experience with the breeding of all classes of pure-bred stock, and who in early life was associated in business with many of the great lights of Short-horn history, this production will be recognized by all as one of exceptional value.

From Mr. Jos. Harris, Moreton Farm, Rochester, N. Y., we have received the Moreton Farm Catalogue of garden, field and flower seeds, Essex pigs, and Cotswold sheep. We are not a little glad to see friend Harris extend his field of usefulness, as by this "new departure;" and we doubt not his many friends in Kansas will agree with us in this. We have looked over the catalogue, and find the prices reasonable. As to the seeds, we can only say that we have tried some of them and found them very good,—much better than had been promised, in fact.

The officers elected yesterday by the Alpha Beta Society are as follows: President, George H. Perry; Vice-President, William N. Rose; Secretary, Gracie Parker; Marshal, C. C. Chenoweth; Treasurer, George E. Rose. The debate was postponed for one week. The *Gleaner* was presented by C. J. Reed and Miss Hutsell, and the appreciation of the audience showed that their labors had not been in vain. The only thing to regret is that so many of the members were absent, at the trial. On account of most of the members being in a hurry, the Society passed extemporaneous speaking; and, after report of critics and reading of the minutes, the Society adjourned. HOMBRE.

The second session of the Webster Senate was held on last Saturday evening. There was a large attendance, and the session will long be remembered as one of unusual interest. After the preliminary matters were disposed of, the Senate went into committee of the whole, with Senator Eckman in the chair, to discuss the bills introduced at the preceding session. The founding of another agricultural college was among the subjects which excited the most discussion. After the committee had risen and reported progress, the Governor's message was read, and a number of bills introdueed. Among these bills was one of considerable importance to the State,—that of rebuilding the Normal School, at Emporia.

The name of Theodore Reynolds was proposed for membership in the Society.

To the "indomitable reporter" of the Alpha Betas we would speak plainly, and say that we admire his candor and child-like simplicity, but are sorry to hear that he would be obliged to "manufacture" his thunder. We always supposed that his nervous system could generate enough electricity for at least one audible "report." L.

The Kansas *Farmer*, in the course of an extended review of the reports of the different department of the College, makes some very pleasant comments upon the work of the institution, from which we take the following:

We are pleased to see that the fact, so apparent to all practical minds, is beginning to force its way into that of the schoolmen's, that the purely ornamental in education must be made subservient to the useful, and that the old order of the schools is to be reserved. The colleges and seminaries which insist on clinging to the old custom of placing the ornamental above the useful, will decline and wane until they either reform or go out of existence, as they should. That the State Agricultural College has boldly taken this new departure, is one of the most promising signs of its future prosperity and usefulness. * * * *

We cannot close this somewhat lengthy review of the report without paying a well-deserved tribute to Mrs. M. E. Cripps, *Professor* (shall we say) of the Woman's Industrial Department. The branches taught in this department may justly claim to share with the "Father of his Country" the high encomium, "First in war, first in peace, and first in the hearts of his countrymen. * * * * *

The Agricultural College of the State of Kansas has before it a rare field for usefulness, which its officers seem to discern, and evince a commendable zeal in pursuing. The College strikes the keynote which is in harmony with the age, when it declares that the true test of education is its "cash value of knowledge to workingmen!"

NATIONALIST ITEMS.

The office of the Adams House is now one of the neatest in the State.

The mechanics are at work on the steeple at the Presbyterian Church.

Six cars of stock were shipped east on Monday and Tuesday of this week.

J. H. Pillsbury, has been reappointed and confirmed post-master at Manhattan.

Leroy Clark is erecting a frame dwelling near the old school-house. It will be 28x32 feet, and 1½ stories high.

Five young persons were baptized at the Methodist Church last Sabbath, and two persons united with the church by letter.

It is reported that the side-track running to the elevator and Adams' lumber-yard is to be extended to Poyntz Avenue. The Major has removed his scales to Pierre Street.

A very excellent family, who came here a short time ago, hunted everywhere in the vicinity for a house, not desiring to build at once, but found it impossible to obtain even rooms.

The trial of Charles Bates, for the killing of P. W. Peak, is now in progress; Green & Hessin and Tom Fenlon for the prosecution, and McClure & Humphrey and Judge Hungerford for the defense.

Drs. Little & Robinson are making preparations to erect a story and a half stone building, 25x60, on their lot just west of Squire Tyrrell's harness shop. They will have a drug store in the front, and their offices in the rear.

One of the workmen on the railroad bridge fell off the east end on Wednesday, lighting on a pile of rock at the abutment; and was struck by a piece of timber and knocked, head first, into the river. We understand he was considerably bruised, but not seriously injured.

Dr. P. McVicar, President of Washburn College, is to preach at the Congregational Church at 2:30 P. M., Tuesday, March 11th, dedicating the new church. Rev. Blakesly will preach in the evening at 7:30; and Rev. E. Skinner, on the evening of Wednesday, March 12th.

The Horticultural Society of Manhattan will hold its regular monthly meeting at the Horticultural room, at the College, the second Thursday of this month, the 13th inst., at one o'clock P. M. Subject, "Our Insect Enemies and Friends." A general attendance is desired.

A large, white swan, measuring eight feet from tip to tip of wings, and four feet and some inches from the bill to the end of the tail, and weighing eighteen pounds, was sent up from Deep Creek, Wabaunsee county, last week, to be stuffed by Dr. Blachly, the taxidermist of this part of Kansas.

DIRECTIONS TO APPLICANTS.

TERMS OF ADMISSION.

Candidates for admission must be fourteen years of age, and pass a satisfactory examination in reading; arithmetic, through decimal fractions; and English grammar, to syntax. Classes are started at the beginning of each year in Drill in Arithmetic and Drill in English; and the pupil must have the knowledge above indicated, else he will be unable to retain position if admitted.

Pupils will be received at any time during the year, if able to pass an additional examination upon the subjects studied by the classes which they expect to enter. But they will find it greatly to their advantage to be present at the opening of each term, or as soon thereafter as posssble.

GRADES.

Both the Literary and Industrial recitations are graded daily upon a scale of 100; and an examination of all classes is made at the close of each month. A student not attaining an average grade of sixty is promptly dropped to a lower class, or excluded from the Institution until able to do so. The work of grading is strict and uniform in all the departments, and this process is rigorously used for sifting out incompetent and indolent pupils; thus more than accomplishing all that is designed to be effected by a "high standard of admission." Hence, the student's continuance in the College wholly depends upon his own action.

The course is based upon the determination to make the labor required in the preparation of one industrial and three literary recitations as much as the average student can perfectly perform, in ten hours a day. We design to give the pupil the worth of the time expended at College; and, in order thereto, he must do a full day's work with brain or hand. Only those students who can maintain a standing of ninety in each study will be allowed to take more than the prescribed number of recitations; and no one will be permitted to have less than one industrial and three literary recitations.

RELIGIOUS.

Unless otherwise directed by parents, students are required to attend chapel at 8:30 A. M. on academic days, and divine service once every Sabbath.

EXPENSES.

There are no charges whatever for enrollment, attendance or instruction in the regular courses; nor are there any "contingent fees" for the repair of buildings, for the use of books or apparatus, for diplomas, or the kindred privileges usually grouped under the term "contingent." Male students are furnished instruction, the use of apparatus, instruments or tools, in both the literary and industrial classes marked out for them, without any charge. And the same is true of female students in the regular classes provided for them. Printing and Telegraphy are industrials primarily provided for the education of female students, and male students taking either of these are charged $1 per month for use of instruments.

Instrumental music is a fine art or "accomplishment," rather than a mechanical art. We do not place it among our "industrials" in the same sense, or for the same purpose, that we do those provided for teaching the trades. Accordingly, a fee of $12 per term, or seventy-five cents per week is required from female students for tuition and the use of pianos or organs.

The only charge made for material in either the literary or industrial departments is for the chemicals used by students in laboratory practice, which are furnished at wholesale prices, and amount to but a small sum.

Furnishing an absolutely free education is as much as can be reasonably asked; and the Institution neither boards, clothes, nor supplies the student with text-books. Boarding can be obtained in private families at from $2.75 to $4 per week. Washing costs from seventy-five cents to one dollar per dozen. Text-books, which can be procured in Manhattan, cost from $2 to $5 per term.

No student need expend over $5 per week; and many of our best pupils are living at $1.25 per week. Students desiring to "board themselves" can do so at from $1 to $2 per week. In a club of four young men, renting a house, the average cost to each for the term was $1.11 per week.

LABOR.

Manual labor by the students may be for either of two purposes: First, to acquire skill in a given art; second, to earn money. In the first case, the labor is educational; in the second, it should be paid for by the party benefited.

Educational Labor.—Manual labor in the reciations of the Industrial Departments, like mental labor in those of the Literary Departments, is purely educational and will not be remunerated. While the interest of the student will be held paramount in the direction of this labor, the practice necessary to dexterity will be required.

Remunerated Labor.—When the Institution needs labor on the Farm or elsewhere which is not educational, but simply for its own profit, and which a student is able and willing to perform, it becomes an employer instead of a teacher, and he an employe instead of a scholar. It pays for work, he works for pay. The relation between them is commercial, not educational; and both parties must act upon business principles. Hence, the College furnishes only such employment as its own interests require, and will pay according to the value of the service rendered at from seven to ten cents an hour.

AMOUNT EARNED.

It is impossible to predict how much a given person can earn, since that depends upon what he can do and what work there is to be done. Hence, it is wholly impossible for us to answer the question so often asked: "Do you think I can meet my expenses by work?" Some students make one-half their expenses, some the whole, and exceptional men have made more than expenses. As a rule, a faithful boy skilled in farm work can earn half his expenses on the Farm or in the Nursery. During the year he can ordinarily acquire sufficient skill in the wood or iron shops to enable him to make articles for sale. The whole question is one for his own consideration and decision. We can teach all who come, but cannot absolutely *promise* anything more. Hitherto we have refrained from holding out strong inducements respecting the amount of labor we might have to offer; but in view of the fact that during each of the last three years we have had more to do than the students could perform, we are inclined to give greater and positive encouragement on this point. Any boy who is in dead earnest, who is familiar with farm operations, and who can raise $50 to start with, should be able to carry himself through the four years' course. And certainly this places an education within the reach of every determined boy. As yet we are unable to offer similar advantages to girls, not requiring labor in the College departments which they can perform.

RULES.

1. Behave as a true man or woman should, at all times and in all places.
2. Attend to your own business promptly, thoroughly and courteously; and vigorously let alone that of other people.
3. Penalty: "Leave!"

PUBLICATIONS.

The "Hand-Book," published in 1874, containing a full discussion of the educational question and the aims of the Institution, will be forwarded to any one desiring it.

THE INDUSTRIALIST, a weekly journal edited by the Faculty and published by the Printing Department, contains original and seasonable articles on the Farm, Orchard, Trades, Sciences, and Education. Price, 75 cents a year. Address A. A. Stewart, Manhattan.

CALENDAR.

Winter Term 1879.—Began Friday, January 3d, 1879.

TO NEW STUDENTS.

Bring the text-books you have been using. On arrival, first arrange for your boarding. A. A. Stewart, Sup't Printing Department, will furnish information, either by letter or on application, concerning boarding places or rooms for rent. Report to the President at 8:30 A. M., immediately after chapel, for enrollment.

For further information apply to Jno. A. Anderson, President, Manhattan, Kansas.

THE INDUSTRIALIST.

SATURDAY, MARCH 8, 1879.

INDUSTRIAL EDUCATION.

The real value of an education to the student depends upon two things: First, the practical worth of the knowledge taught; and, second, the degree in which he makes it his own. Hence, the ability of any institution to give a practical education depends upon the kind and aim of the knowledge it teaches, and upon the thoroughness of the instruction therein. The State Agricultural College was directly endowed by Congress, and is guided by the State, for the specific purpose of furnishing to the industrial classes of Kansas a "practical" education, that is, "one fit for use." As its name indicates, and as the statistics of the industries of the State require, its chief work must be that of giving a useful and usable education to those who will engage in farming; and, therefore, the Farmer's Course must, from the nature of the case, be its main one.

FARMER'S EDUCATION.

Words and figures are merely instruments with which to record ideas. They are not themselves ideas, nor should they be made the chief end of an education. As a wagon is necessary to haul grain, so are they a necessary part of an education; but as the wagon is not the grain, so they are not the knowledge which the farmer converts into money. Hence, the classics and higher mathematics are not taught. But it will be noticed in the following course that so soon as the pupil acquires working skill in the use of the English language as a tool, and of figures and lines as mathematical tools, those arts and sciences which present knowledge that has a cash value to the farmer are taught as rapidly as their importance and thorough acquisition will permit. Studies numbered (1) and (4) in the second, third and fourth years are the spine of the course, to which the others are as ribs and muscle.

FARMER'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Practical Agriculture (advanced.)		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit. Economy, Practical Law.		3. Practical Geometry.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. Practical Agricul. (elementary).		4. English Structure.	
5. Agricul. Chemistry, Meteorology.		5. Organic, Analytical Chemistry.		5. Physics.		5. Adv'd Arithmetic, Book-keeping.	
6. Logic.		6. Practical Surveying.		6. Industrial Drawing.		6. U. S. History, Industrial Drawing.	
1. Farm Economy, Special Hygiene.		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit. Economy, Practical Law.		3. Industrial Drawing.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. English Literature.		4. English Structure.	
5. Phys'l Geography, Meteorology.		5. Organic, Household Chemistry.		5. Physics.		5. Adv'd Arith., Book-keeping.	
6. Logic.		6. Household Economy.		6. Industrial Drawing.		6. U. S. History, Industrial Drawing.	

WOMAN'S EDUCATION.

Nearly one-half of our students are females, and the Woman's Course is prepared expressly for their liberal and practical education. We have no doubt whatever that practical men and women, who understand what it means and what it seeks to do, will fully endorse it.

WOMAN'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Farm Economy, Special Hygiene.		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit. Economy, Practical Law.		3. Industrial Drawing.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. English Literature.		4. English Structure.	
5. Phys'l Geography, Meteorology.		5. Organic, Household Chemistry.		5. Physics.		5. Adv'd Arith., Book-keeping.	
6. Logic.		6. Household Economy.		6. Industrial Drawing.		6. U. S. History, Industrial Drawing.	

MECHANIC'S EDUCATION.

Because of the adaptedness of the leading course to the wants of the intelligent mechanic, it has been found practically unnecessary to diverge from the Farmer's Course. Additional studies, specially adapted to the mechanic's use, will be furnished in a Post-Graduate's Course.

If it be urged that the distinctively agricultural knowledge taught in the Farmer's Course is not directly valuable to the mechanic, we reply that, admitting the point for the purpose of argument, yet: 1. This knowledge is of more practical value to the mechanic than is the Latin, Greek, or a half dozen other things embraced in the usual course preparatory to the professions; 2. That the great majority of Kansas mechanics will also be more or less engaged in agriculture; 3. That those studies in the course which are directly valuable to the mechanic, together with the shop facilities, offer a better mechanic's education than can be elsewhere found west of the Alleghanies.

INDUSTRIAL DEPARTMENTS.

Having knowledge in the head is one thing; ability to use it with the tongue, fingers or feet is quite another thing. Both are vital to success in practical life. A man might thoroughly understand the theoretical principles of carpentry, and yet, not having used the tools, be wholly unable to earn carpenter's wages. So in all other vocations. Accordingly, instruction is given in the following well-equipped Industrial Departments, and every student is required to recite in some one of them, as selected by the pupil or parent:

FOR MALE STUDENTS.	FOR FEMALE STUDENTS.
The Farm.	Dress-making.
The Nursery.	Printing.
Carpentry.	Telegraphy.
Cabinet-making.	Scroll-sawing.
Turning.	Carving.
Wagon-making.	Engraving.
Painting.	Photography.
Blacksmithing.	Instrumental Music.

Each of these departments is conducted exactly as in daily life, and aims to give precisely the drill received by an apprentice. No charge is made, either for tuition or material, from male students taking the Industrials provided for them; nor from female students taking the ones provided for them, except in the Department of Instrumental Music. Male students taking either Printing or Telegraphy are charged $1 per month for the use of material and instruments.

DEPARTMENTS OF INSTRUCTION.

DEPARTMENT OF AGRICULTURE.

PRACTICAL AGRICULTURE.

Second Year:—General principles of breeding; history and characteristics of breeds; adaptation of different breeds for special purposes and localities; implements of simple tillage; mechanical principles involved in their construction; action of the plow upon soil and subsoil; principles of draught; influence of different adjustments upon draught; use of the dynamometer; value of hoed crops in a system of husbandry; the cultivation of corn and roots; soils that need drainage; how to lay out a system of drains; house drainage; sewerage.

Fourth Year: General view of agriculture, ancient and modern; agricultural progress of the last century; relative advantages of mixed husbandry and special farming; the selection and arrangement of the farm with reference to the system to be pursued; rotation of crops; general advantages of a rotation; the best rotation with reference to disposition of labor, production of manure, and extermination of weeds; pasturage and production of grain and forage crops; manures, how best housed and applied; composting manures; commercial fertilizers; systems of feeding; stall feeding; steaming food; soiling; experiments in feeding; farm buildings; farm-houses; barns.

FARM ECONOMY.

Woman's Course, Fourth Year: Dairy products as human food; influences affecting character of milk; manufacture of condensed milk; the factory system and household plan of cheese-making; treatment of rennet; general process of cheese manufacture; subsequent t eatment of cheese; butter-making; creameries; "deep" and "shallow" setting systems; general process of butter-making; packing and preserving butter.

DEPARTMENT OF BOTANY AND PRACTICAL HORTICULTURE.

This department embraces a course of instruction in the elements of botany, structural and systematic, with a constant attention to the practical application of botany to the farm, orchard, garden, nursery and forest; also a course of lectures on Landscape Gardening. The instruction is mainly given by lectures, accompanied by regular practical drill in all the work of the fruit, vegetable and flower gardens, nursery, orchard, vineyard and ornamental grounds.

The lectures in Practical Horticulture embrace the following and kindred subjects: The relation of atmospheric motion, moisture and temperature to horticulture; seeds, the means of collecting and preserving; propagation, by seeds, cuttings, layers, suckers, grafting, budding; care of young plants; improvement of varieties; management of commercial and farm nursery; modes of pruning; the orchard; fruit suitable for orchard and garden culture; the flower, vegetable and fruit garden; importance and mode of forest culture; shelter belts and their influence; weeds and useful plants; noting the species of trees worthy of culture, either for profit or ornament.

LANDSCAPE GARDENING.

The lectures on Landscape Gardening not only unfold the accepted principles of the art, but at the same time give special attention to such applications of the art as may be made universally available in laying out and improvement of farms and the homes of the people. These lectures are accompanied by a practical drill in in the work of laying out and plotting grounds topographically.

CHEMICAL DEPARTMENT.

PHYSICS.

This includes a full consideration of the laws of mechanics, of liquids, gases and vapors, weights and measures, and specific gravity, followed by experimental study in the Physical Laboratory of the laws of heat, light, with spectrum analysis, electricity and magnetism, and the relation of these forces to plant and animal life. Text-book, Ganot.

INORGANIC CHEMISTRY.

This course is opened with a careful study of chemical forces and the laws governing chemical combination. The elements, with their compounds, are next considered in succession as to their history, properties, manufacture, and especially with regard to their uses on the farm and in the arts. These lectures are accompanied by an extended course of laboratory practice in which each student performs every experiment with his own hands. Text-book, Eliot & Storer.

ORGANIC CHEMISTRY.

This comprises a thorough study of the chemistry of the organic compounds, the composition of plants and of the various compounds derived from them. Constantly accompanied by laboratory practice.

CHEMICAL ANALYSIS.

In this course each student is furnished his stand in the Qualitative Laboratory, completely furnished with apparatus and chemicals for his own use. He here performs analyses of farm soils, plant ash, commercial manures, ores, mineral waters, commercial compounds, etc. After completing this course, he enters, if he desires, the Quantitative Laboratory, where he pursues a full course in quantitative analysis. Text-book, Kedzie's Manual.

AGRICULTURAL CHEMISTRY.

This includes a thorough consideration of the application of chemical principles to the economy of the farm; the origin and formation of soils; the classification and composition of soils; the analysis of soils and their adaptation to purposes of production; the composition and use of manures; composting; chemistry of farm operations, such as plowing, fallowing, draining, etc. Text-book, Johnson's "How Crops Feed."

METEOROLOGY.

Embracing the composition of the atmosphere; atmospheric pressure; temperature and humidity; laws of storms; rain, snow and atmospheric electricity. A full course in meteorological observations is taken under direction of the Signal Service. Text-book, Loomis' Meteorology.

MINERALOGY.

This includes the study of the laws of crystallography, with the properties, forms and uses of the principal minerals of the United States. Blow-pipe analysis forms a very important part of the course, each student being required to name and identify a large series of minerals. Text-book, Dana's Mineralogy.

HOUSEHOLD CHEMISTRY.

A course of lectures on this subject is yearly delivered to a class of young ladies. The course embraces the chemistry of cooking; the composition of food; bread; tea, chocolate and coffee; butter and milk; ripening and preservation of fruits, etc.

SPECIAL COURSES

Are constantly in progress in Assaying, Pharmaceutical Chemistry and Photography.

ENGLISH LANGUAGE.

Words are simply tools used to express ideas; and, since the vast majority of our communications are made by the employment of spoken or written words, skill in using them is as profitable to the industrialist as dexterity with the needle is profitable to the seamstress. The direct aim of the course is to make the student skillful and intelligent in handling the machinery called language, just as an engineer handles a locomotive; and no drill will be omitted, or effort spared, to gain this end. Apart from the course itself, which is far more practical and complete than that usually found in literary colleges, the constant attention given this subject by all the departments, and especially the practice required in the printing classes, affords superior advantages to the student.

DRILL IN ENGLISH.

"As grammar was made after language, so ought it to be taught after language."—*Herbert Spencer.*

Drill in English embraces the following topics:

Sounds of the language; drill in producing the vocal, sub-vocal and aspirate elements with accuracy, distinctness and volume; vowels, consonants.

Letters: Form; power; rules for spelling, drill.

Words: Signification, properties, modifications, variations, relation and dependence.

Sentences: Drill in statement of ideas; description, clearness, terseness, vigor; business letters, discussion; capitalization; syllabication; punctuation; construction and analysis of sentences; elements, uses and names; criticism of compositions printed as written; proof reading; grammatical construction; superfluous words and clauses; drill in reading, speaking and penmanship.

Text-books: Webster's Academic Dictionary; Lee & Hadley's Advanced Lessons in Language.

Pupils deficient in spelling, etc., should enter the printing class, the printing-office being the work-shop of language.

STRUCTURE OF ENGLISH.

ELEMENTS OF WORDS.—The end aimed at in this study is to learn everything about words which will aid in their effective use. Among the topics included are:

Roots: What are they; their origin; their force and value as an element of language; the manner of their growth into different parts of speech.

Stems: Their derivation; their offices and properties; their relation to other parts of words.

Prefixes and Suffixes: The several sources whence derived; the relation of their force or significance to those sources; explanation of the laws and principles governing their use along with stems.

Compounds: Their value; their properties and uses; the laws governing their formation.

Synonyms: Definitions; causes of their abundance in English; the principles to be observed in choosing among them, to express a thought.

Criticism: This constitutes a prominent part of the exercises of the pupil through his whole course in the study of English. It not only diversifies and enlivens the class-room exercise, but reduces to practice the principles of the structure of the language. By this means, the student acquires not only a knowledge of English, but readiness and accuracy in speaking or writing it. The exercises in criticism embrace not only examination of selected matter, but original composition.

ELEMENTS OF SENTENCES.—The purpose in view in studying this subject is not to traverse the ground gone over in the study of grammar, but to fix in the mind of the student a clear understanding and remembrance of names, the properties and offices of the several classes of words entering into an English sentence, by showing him the reason of things; to make more simple, as well as interesting and practically useful, a study otherwise "dry and unprofitable" in many cases, by explaining the reason of the verbal forms and changes, the rules and maxims he is to remember and observe in his use of language. In the same manner he is conducted through a study of the mutual relations and dependencies of the several elements making up a sentence.

MATHEMATICAL DEPARTMENT.

Figures and lines, like words, are only instruments with which to convey ideas, or perform operations that cannot be easily done without them. The arithmetical principles used in business are few and simple; but accuracy and rapidity in computation are only gained by practice. College graduates often fail to retain clerkships, not because they do not know *why* given operations are performed, but because they can neither add, multiply or divide with that habitual correctness which renders their work reliable.

DRILL IN ARITHMETIC.

The chief design of this study is to make the student expert in the use of numbers, as employed by the industrialist for profit. The occupation of a successful farmer demands the application of every principle of practical arithmetic, and is taken as a starting point, rather than that of an abstract system. Beginning with a simple cash account, book-keeping is gradually developed to the full extent of its real utility. The areas of fields, expense of crops, construction of houses, sales of produce, and investment of capital, involve all the fundamental operations, and those of profit and loss, commission, taxes, insurance, exchange and stocks. Following this line, the student, so far from hammering away at "pure" science draws from the mathematical store-house what he needs, and sees why he needs it. Accuracy of calculation and posting, rather than a *mere* comprehension of the principles, is aimed at. Besides the recitation-room drill in business forms, practice in the field is also given. Estimating the number of cords in a pile of wood said to be 100x4x4 feet is one thing; measuring a pile of wood through which any number of cats may be harmlessly thrown, and in which four-feet sticks are the exception, is quite another and more difficult thing.

ARITHMETIC AND BOOK-KEEPING

Is a continuation of the above, having the same purpose and adopting such methods as the necessities of the class indicate. Thorough instruction in the principles and forms of business law is given. It will be seen that this method of teaching book-keeping, besides ensuring arithmetical practice, develops practical skill in that important art.

ALGEBRA.

Algebra is included in the course as a preparation for the study of Surveying.

DRAWING.

The practical value of Industrial Drawing can hardly be overestimated, first, because its study is the best drill for the development of the perceptive faculties, which are the ones most employed in daily life; and, second, because the working classes make a far greater use of lines than they do of figures. A farmer follows a line when laying a straight furrow; the carpenter uses the square and rule twenty times as often as he does figures; and a woman in cutting a pattern, or deciding that one bonnet is prettier than another, does so by the line or "form." So that either in its direct application, or in the exercise of that taste which comes from skill in using lines, this branch of mathematics is quite as important as a means of "mental discipline" as is the branch of computation, and is of far greater daily use. The admiral system of Prof. Walter Smith, Art Director of Massachusetts, is thoroughly followed through the grades of Free-hand, Geometrical, Object, Model, Perspective, Mechanical and Topographical Drawing, during the terms indicated by the Course of Study. In addition, constant practice in the application of lines to metal and wood is furnished in the Blacksmith, Carpenter, Turning, Scroll-sawing, Carving, Engraving and Printing shops, and to fabrics in the Sewing Department.

PRACTICAL GEOMETRY.

Not one farmer in a thousand ever uses the transit in surveying his land, the testimony of the county surveyor being decisive in court; but every farmer makes countless applications of lines and angles in laying off fields, roads, gardens, planning houses, determining levels, etc. The object of Practical Geometry is to teach the properties and uses of angles, and to make the student skillful in the application of lines to the field by the use of such simple instruments as are always within reach, or within his ability to construct; and accurate in the transferring of plans to the grounds, board or block.

PRACTICAL SURVEYING.

The drill in the use of figures and lines given by the mathematical course as above indicated, renders the mastery of surveying an easy task. There is no calculation made or formula used by the working engineer which cannot be readily understood and performed by a skillful arithmetician after proper instruction. The hand-book of the engineer is accordingly supplemented with such special guidance as is found necessary for a full comprehension of the mathematical principles and their applications; and extended field practice is required in the use of the compass, level, transit and theodlite.

THE INDUSTRIALIST

VOL. IV. MANHATTAN, KANSAS, SATURDAY, MARCH 15, 1879. No. 48.

THE INDUSTRIALIST.

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OF THE
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Address A. A. STEWART, Manhattan, Kas.

Report of Land Agent.

To the Board of Regents of the Kansas State Agricultural College:

GENTLEMEN: — I herewith submit my usual report, covering the fiscal year beginning Dec. 1st, 1876, and ending June 30th, 1878:

There were yet unsold, Dec. 1st, 1876, of the lands in my charge,	31,461.00 acres.
Returned to market, by action of courts and by settlement with former purchasers, during the term just closed	3,179.47 acres.
Making a total of	34,640.47 acres.
I have sold from the foregoing	4,000.00 acres.
Leaving unsold at this date	30,640.47 acres.

The average price received for the lands sold since last report is $5.88 1-10 per acre.

Exhibit A, hereto attached, gives the description of the lands canceled during the term covered by this report, and other facts in reference to the same. To this exhibit I desire to especially call your attention.

At the date of my last report there were in my custody notes of the aggregate value of	$78,883.59
This value has been increased by notes on account of sales, as per Exhibit B	17,974.55
Total value	$96,758.14
Decreased by payment of notes, as per Exhibit C	$13,423.39
And by cancellations, as per Exhibit A	11,707.34
A total decrease of	$25,130.73
Leaving now in my custody notes bearing ten per cent interest, payable annually, of a value of	$71,627.41

The entire receipts in my department, since last report, are as follows:

Cash, from sales of land	$ 5,550.00
Cash, account of installments, (notes)	13,423.39
Cash, account of interest on notes	5,633.90
Cash, account of compound interest	440.98
Total cash receipts	$25,048.26

For above sums I hold the Treasurer's receipts, which are herewith submitted for your inspection (see package marked "A 1"); and I desire that my accounts may be audited and passed upon by the Board of Regents.

For a more particular detail of above receipts, reference is had to Exhibit D, hereto attached.

Exhibit E gives description of the lands sold, and prices and terms of sale. Exhibit E also shows the detail of notes received on account of sales, the aggregate of said notes being $17,974.55.

For your convenience in making calculations for the future, I have prepared a table, marked Exhibit F, which shows the amounts of principal and interest falling due each month of the ensuing fiscal year, the totals of which are:

Principal	$10,505.88
Interest	5,312.77
Aggregate	$15,818.65

I will add that the amount of principal above named will very certainly be paid in, and there is not much doubt but the interest will also be forthcoming.

During the term since last report, twenty-six patents have been issued, covering 9,272.74 acres of land. Exhibit G, submitted herewith, gives the names to whom patents have issued, and the tracts of land covered by each patent.

There is a marked improvement in sales within the last twelve months, and the future looks bright.

I am, with respect, yours, etc.,
L. R. ELLIOTT, *Agent.*

Manhattan, Kas., July 1, 1878.

THE total value of the butter and cheese produced in the United States during the past year was $350,000,000 — or $50,000,000 more than the value of the entire wheat crop of the country.

A Michigander on the Agricultural College.

The State Agricultural College of Kansas is situated about a mile from Manhattan, a very flourishing city, which has about 3,000 inhabitants, three substantial banks, many elegant dwellings, and remarkable resources for doing business generally. The store of Mr. E. B. Purcell is a very extensive one, substantially built with limestone, abundant quarries of which are in close proximity to the city. This store contains almost everything necessary for the use of mankind; and the number of employes in attendance are always ready to attend to the wants of all who visit it, and business with dispatch is a marked feature. I observed this with pleasure, as I waited for Mr. Purcell's return, who is Treasurer of the College, and to whom I had a letter of introduction. He immediately ordered his superintendent to bring his horse and buggy to the front, and drive me to Prof. Shelton's house. We were soon known to each other, from circumstances of earlier times.

The first object was the cattle, which were all out in the yard, feeding upon the wheat straw and chaff, which they seemed to enjoy. This is the first stack of wheat straw I have seen in a barn-yard in Kansas, and Shorthorns working their way into it,—a good example for our farmers to follow. The time will come when absorbents will be prized instead of being destroyed, regardless of the present extraordinary fertility of the soil, and the idea that it cannot be exhausted. I was exceedingly glad to find the Shorthorns so good, and a superior quality of young Marys. Although they were — uniformly — dark red, a color I cannot pronounce to be "pure Short-horn," yet other characteristics were strong indications of the best. Most of them have quality, symmetry and constitution in compactness. The major part of them have good, thick, mellow hides, straight tops and bottoms, with well sprung ribs. If a bull is selected to match well with these cows, the herd will be a very promising one; but I should try to change the color,— which is a prevailing one with most of the best,— but every one to their liking, as the old woman said when she kissed her cow.

The stable is complete, with ground floor; the fastenings economical, safe and secure, although quite new to me, and I think worthy of adoption. This is an invention of Professor Shelton's, and very simple. A rope runs all through the stalls, with a clasp in the centre of each, which is fastened to the ring in the halter as soon as the animal enters the stall, the rope allowing it plenty of liberty either way for all purposes. The liquid passes off in a drain to moisten the manure in the yard, where that from the horse and cow stables are mixed together. This arrangement is a good one.

The Galloways are good, and one of the Aberdeen character a very good one; the Alderneys tolerable.

The conveniences for feeding are all well arranged. The Berkshires are superior. The old boar bred by William Hewer, of Sevenhampton, England, is as good as can be found in that mother country.

This stock is kept purposely to benefit the State of Kansas, and not for the selfish motive of making money; but they intend to produce the animals as near perfection as their judgment, care and skill will allow, as an example to the farmers around them; and my impression is that Professor Shelton is "the right man in the right place" to teach and realize what can be done. He says he has experimented with a hundred kinds of tame grasses, and those he most approves are the orchard-grass and Kentucky blue-grass for pasture. Alfalfa, with rich, liberal culture, is very useful, both for pasture and mowing. He had cut four large crops of hay, of good quality, the past season from a small field of alfalfa. I examined the hay in the barn. It is, in my opinion, far better than timothy, and contains more saccharine matter.

The principal aim of the College is to give all boys and girls, alike, such an education as will be directly available to them in the every-day affairs of life. Unlike college institutions generally, "mental discipline" is a secondary matter, and studies and industrials, alike, are arranged with sole reference to their practical utility. To this end the principal departments of the College are: First, the department of practical agriculture; second, mechanical; third, literary and scientific. A most interesting branch of this department is devoted to the young ladies, in the useful industries proper to the sex. Here they are taught the making of patterns, the cutting and fitting of dresses and other garments, and all the various branches of needlework. In a department of the large laboratory, all the young misses are given regular instruction in the art and science of cooking. This is found to be one of the most attractive departments of the College, as it is certainly one of the most useful. It has been found, from the experience of past years, that the difficulties which might be supposed to surround this question, exist in imagination only, as the students boarding in the vicinity get their cooking done by furnishing the raw material for experimentation.

In addition to this, wagon-making and blacksmithing are taught by competent men. Upon the farm a considerable part of the implements in use, including wagons, harrows and wheelbarrows, are made by the students. I am told that these departments turn out many skilled mechanics, but its chief usefulness must be in educating young farmers in the use of tools, in constructing and repairing implements, etc. Mr. Purcell kindly sent his carriage for me the next morning, to see the students in their different classes; and on my way there I met some of them — both young men and young women — on ponies, which can be bought cheap, here and which are hitched to rails erected for the purpose, and there remain until the recitations are concluded. The majority were on foot. They number about one hundred and fifty, and it was very interesting to observe how well they all behaved.

I met Welcome Wells in the Senate this morning, at Topeka, who says he has sold $10,000 worth of fruit within the past three years.—*Correspondent of the Detroit Homestead.*

Agriculture as a Profession.

The word "profession," used in the sense in which it is commonly understood, implies a calling or occupation in which there is an opportunity given for improvement and progress; and in no case is the word profession applied to an occupation that is merely a mechanical one. The profession of agriculture is not a mechanical one by any means, though farm mechanics is an essential feature in it. There are but few professional callings that occupy a wider field, or one in which intellectual subsoiling is productive of better results. Thanks to the progressive tendencies of the times, the agricultural and grange press, the professional agriculturalist is coming to the front as the peer and equal every way of the lawyer, physician, clergyman and lecturer. This is as it should be. The Grange is entitled to its full share of credit in the accomplishment of the desired result.—*Cincinnati Grange Bulletin.*

A SWISS colony is about to emigrate from Switzerland to Georgia.

THE INDUSTRIALIST.

SATURDAY, MARCH 15, 1879.

E. M. SHELTON, Managing Editor.

ASSOCIATE EDITORS, MEMBERS OF THE FACULTY.

DURING the last few weeks we have had the variable weather usual at this season of the year, the barometer making great and irregular fluctuations; but the most remarkable of these storms occurred on the 7th and 8th. For several days previously, the barometer had been running down and the thermometer gradually rising. At seven o'clock on the morning of the 7th, the barometer was .40 of an inch below the mean, the dry bulb stood at 52°, the wet bulb at 51°, and a gentle breeze was blowing from the south. It will be observed that the air was nearly saturated. There was, moreover, the heaviest dew of the season on that morning. The barometer continued to fall. At two o'clock a strong wind was blowing from west of south, the dry bulb marked 85°, and the wet bulb 62°, a difference of 23°.

During the afternoon the wind continued to increase in violence; the thermometer rose to 92° in the shade, there being a difference between the wet and the dry bulb thermometers of 25°. By nine P. M., the temperature of the air was 70°, while the wet bulb marked 48°. The wind blew with unabated fury during the night of the 7th, and until far toward morning of the 9th. The hygrometic condition of the atmosphere remained nearly as above indicated. The 9th was a very mild, pleasant day, and the meteorological conditions soon became normal.

During these observations the hygrometer was suspended freely upon the north side of a building, and protected from currents of air. These results are, then, to be considered as strictly due to the evaporation incident to the extreme dryness of the atmosphere. A comparison of these observations with those made during the heated term last summer, shows that at no time then was the relative humidity as low as on the 7th; and this storm owes its chief interest to this fact. Much of the affections of the throat which prevailed during this time were primarily due to dryness of the air.—*G. H. Failyer.*

Education in Switzerland. No. III.

No contract compelling the young teacher to teach five years, or to repay the State for his education, could retain a talented and well-educated man in the ranks of the profession, if poor wages and uncertain employment would await him there. A more or less secure future must be in view before any man can be contented. To attract the young pedagogue with glittering gold only, would be unwise and expensive for the State; and so the Swiss offer the following inducements:

The teacher is a civil officer. He is free from military duties. He is elected for a term of four years, and, in some cantons, for life. He receives a fixed salary of generally not less than five hundred francs (5 francs=$1) from the school district, and a pension from the cantonal government. In Solothurn and other cantons, this pension is increased fifty francs every five years; so that, beginning with about two hundred francs, it amounts to as much as the salary, after twenty or thirty years of service. The town has to furnish him with a dwelling, a small barn, a tract of garden land, and several cords of fire wood. The Swiss schoolhouses are, for this reason, built like our suburban residences, rather than our public institutions. Besides this, the teacher is permitted to deposit a certain part of his income in a State bank, at an exceptional high rate of interest, exempted from all taxation, and secured against all claims of his creditors in case of bankruptcy. Some cantons do even better than that. In Bern, for instance, a number of wealthy citizens have formed, by voluntary contributions, an aid fund for old or disabled teachers. Fred Fuchs, the author of the "Pen Duel between a Catholic Priest and a Protestant Layman," gave over 50,000 francs. Other cantons have similar funds. After all, the salaries of the teachers are not large; but these different provisions mentioned secure live teachers for the youths and live youths for teachers.

The number of pupils to be taught by one teacher is in most cantons limited to forty. The text-books are either furnished by the State or by the district,—at least the readers and biblical histories. As the necessity for new books is felt, the State Superintendent of Public Instruction appoints a competent committee of teachers to compile a suitable work. Proof-sheets are then printed and distributed among the teachers for examination and discussion at their monthly meetings; and, with due consideration of their suggestions, the work is finally revised and printed. The State becomes sole publisher and proprietor. The advantages of this method are manifold. It gives the teacher the book he wants. Being, so to say, its editor, he takes a great interest in it; and interest is the mother of enthusiasm—the great motor in the school-room. It establishes uniform methods of teaching throughout the State, and permits comparison of work done; it simplifies and reduces the work of the seminaries for teachers; it does away with the intrigues of book agents; and it saves the people a snug amount of cash.

The county superintendents, called inspectors, are appointed by the educational departments of the different cantons, and have, unlike ours, nothing to do with the management of financial transactions in the districts. Their sole duty is the supervision of the manner and effectiveness of instruction in the schools, and the holding of annual public school examinations. The codes of several cantons not only permit that the priest or preacher of the district may be elected as a member of the school board, but declare him a lawful member without election; while, in many cantons, all church officials are prevented by the statutes from ever having any official connection with public institutions of learning. Distely, the Nast of Switzerland, used to caricature these zealotic factions with a span of foxes. One was black as night, dragging an enormous, bushy tail after him; the other one, red as blood, with no tail at all.

The methods of instruction followed in the Swiss primary schools are those of Everhart, Ruegg, Scherrer, Zahringer, Hutter and Weber, in their respective departments; all based on the foundation laid by that father of popular education—Pestalozzi. In the lower classes, the "Auschauungsunterricht" is the main branch of study. This is the oral description and comparison of various common objects, as they may be at hand, as a clock, a safe, a desk, an overcoat, etc., for the purpose of strengthening the perceptive faculties and teaching correct speaking. Reading, when once learned, is combined with speaking, in these exercises, to produce accuracy in the latter, which is a difficulty where the language has been corrupted into a dialect, as the German was in northern Switzerland. Mental arithmetic is taught after Grube's method. Grammar is given only in the upper classes or the county high schools; and there in connection with the French in the German, and the German in the French, districts. Some twenty years ago grammar was more extensively taught, but since that time it has received its proper place in the garret, among educational absurdities.

Reading and writing are an easy task for the youths of Switzerland compared with the labor in store for our boys and girls. The Germans sensibly spell as they pronounce, while we do not. In arithmetic, about one-third of the burden which our teachers carry is taken from the shoulders of their Swiss colleagues by the adoption of the metric system of measurements in that country. These two points are worth considering. It is not a flattering sign for us, the nation that claims to sit on the very hub of progress, to cling to the most absurd system of measurements and the most labyrinthical method of spelling under the zodiac. When I started with my article, I expected to leave the drawing of parallels to the reader, but when I think of these two points I get excited. Where is the schoolman that does not? John Quincy Adams said of the metric system, fifty years ago: "Considered only as a labor-saving machine, it is a new power offered to man, incomparably greater than that which he has acquired by the new agency which he has given to steam. It is, in design, the greatest invention of human ingenuity since that of printing."

Geography, beginning with that of the "Vaterland," is taught in the higher classes. History of Switzerland and of the world is taught in short courses, and treated biographically. Biblical history is given about two hours a week. It is taught from a text-book of Bible extracts, which contain the historical and biographical portions of the Old and the New Testaments, and Christ's parables. All points of dispute between the different religious parties are, of course, left out of this book, and most factions seem to be satisfied with the compromise. Drawing is taught, in most cantons, from the lowest to the highest classes, after the method of Hutter. A main feature of this method is that no object is drawn that is not familiar to the student. It is an excellent work to train the perceptive faculties of the pupil, but, as an educator of purity in style and taste, it is not a success.

The last quarter of an hour of the school-time of each day is devoted to singing, the teacher using the violin in his instructions. In the upper classes, the rudimental theories are taught, and the pupils sing from the book; but the lower classes sing after the violin only. The songs are of a natural character, in music and text. The upper classes sing choral music. National airs and songs for home circles are especially cultivated. As a result, there is hardly a nation that has as rich a treasure of popular airs and as much of home singing. The Swiss melodies are not engrafted; they are natural growth. They spring forth, fresh and pure like mountain streams, free from sickly sentimentality.—*J. D. Walters.*

The Times Still Ahead.

A statement showing the amount of postage paid by the different daily newspapers of Kansas.

[From THE TIMES, Nov. 28, 1878.]

It is the plain duty of THE TIMES to give the public, and particularly our advertising patrons, the facts concerning its circulation, in order that they may fully appreciate its value and importance as an advertising medium.

The surest way to obtain the exact circulation of the papers of the State outside of the counties in which they are published, is from the amount of postage paid by them to the Post-office Department.

Below we give the amount paid by THE TIMES, taken from the post-office receipts of this date.

The amount paid by other papers in the State is taken from the Atchison *Champion*, which claims to have the amount from official sources, and being published in its columns is evidence that it accepts it as correct so far as it is concerned.

THE TIMES, Leavenworth, Kansas	$882.96
Champion, Atchison, Kansas	336.36
Commonwealth, Topeka, Kansas	302.12
Patriot, Atchison, Kansas	112.26
Blade, Topeka, Kansas	107.36
Public Press, Leavenworth, Kansas	102.00
Monitor, Fort Scott, Kansas	73.40

From the above it will be seen that THE TIMES pays more than double the postage of any other daily paper in the State.

THE TIMES pays more postage than any other two daily papers in the State.

THE TIMES pays more postage than any other three daily papers in the State.

THE TIMES pays more postage than any other four daily papers in the State.

THE TIMES, after deducting the amount paid for postage by all the other daily papers in the State upon their exchange list, *pays more postage on its bona fide circulation than all the other daily papers in Kansas.*

THE TIMES has a circulation in the county of Leavenworth on which no postage is paid twenty times greater than any other paper in Kansas.

THE TIMES is this day enlarged four colums, and in addition to being the cheapest and best paper in Kansas, is the largest. Its State News department is alone worth the price of subscription, and is a special feature of the paper, which commends itself to those who desire to keep posted in regard to items of interest in Kansas.

THE TIMES is pre-eminently a newspaper, and with its new and increased facilities, and additional editorial force, will command a place in every household in Kansas.

DAILY TIMES, per annum	$3.00
WEEKLY TIMES, per annum	1.25

Advertising rates reasonable.

Address D. R. ANTHONY,
Leavenworth, Kansas

THE INDUSTRIALIST.

SATURDAY, MARCH 15, 1879.

The Mechanical Department has a gang of boys at work putting down sidewalks.

The class heretofore with Prof. Platt in U. S. History changes to Drawing, under Prof. Walters, next week.

The Mechanical Department has lately framed upwards of forty stock pictures for the agricultural lecture room.

Jno. D. Hartman, of Dickinson county, and J. Stevens, of Chautauqua county, were enrolled as students this week.

President Anderson and family departed for Washington on Thursday last, carrying with them the blessings and good wishes of everybody.

Professors and students speak in the highest terms of their pleasant quarters in the new building. It is a luxury which all can duly appreciate.

The first flower of the season opened its bright face on Monday, the 11th, on the south side of the Horticultural Building. It is a modest, little, yellow crocus.

In the orchard and vineyard, improvement is the order of the day. The vines have been liberally pruned, new trellises raised, and the old peach trees grubbed out.

If you want some good, standard pear trees, send at once to Prof. Van Deman, of the Horticultural Department, and he will sell them to you very cheap. They have been grown in the College Nursery.

It seems more than probable that the Chapel and general assembly room will soon be transferred from "the barn" to the large room occupying the south half of the west wing of the Laboratory.

The class in carpentry for the past month numbered eighty-six students. Mr. Hawkes feels as though he was a little crowded, but he complains as little as the driver of the proverbial "India-rubber omnibus."

Among the incidents of the storm of Thursday, are to be mentioned the destruction, north of the old College building, of Mr. Ed Kimball's barn and out-buildings, with a valuable carriage and farm implements; and considerable hay for Mr. O. W. Bill, in the same neighborhood.

The Governor has lately appointed A. L. Redden, of Eldorado, Butler county, and D. C. McKay, of Carmel, Cloud county, as Regents of this College. These gentlemen take the places of Judge Kingsbury, of Burlington, and Col. Hallowell, of Columbus, whose terms expire on the first of April.

Prof. Van Deman has received from Texas some Bois d' Arc, or Osage Orange, wood. This is plentiful in the Lone Star State. The trees grow rapidly and to a large size, sometimes measuring two feet in diameter. The wood is one of the most durable kinds, and, when neatly worked up and polished, is quite ornamental.

We trust that no one will have the audacity to say that we are less an Agricultural College for having vacated that precious old rookery ycleped "the barn." Students hereafter will be cut off from the privilege of having associations—associations are so precious to college youth!—in common with the Devons, Short-horns and Jerseys.

We have lately received Geo. P. Rowell & Co's American Newspaper Directory for 1879. This is a book of nearly six hundred pages, and contains "accurate lists of all the newspapers and periodicals published in the United States, Territories, the Dominion of Canada, and Newfoundland, together with a description of the different towns and cities in which they are published." It is a valuable reference book, and a great credit to the greatest advertising bureau in the world.

The Alpha Beta Society was called to order by ex-President Sikes. The Society proceeded to the regular order of business under the management of President Perry. The question debated was, "*Resolved*, That Kansas should have a prohibition law." Decided in favor of affirmative. The order of extemporaneous speaking was passed.

Question for next session, "*Resolved*, That the execution of Charles I. was justifiable." Speakers: Affirmative, Giles Howard and Miss Coburn; negative, B. B. Smith and Miss Campbell. C.

The jury in the Bates homicide case, after deliberating nearly twenty-four hours, brought in a verdict of manslaughter in the first degree. The penalty for this crime is not less than five nor more than twenty-one years in the penitentiary. The counsel for the defense filed a motion for a new trial, which will be argued in June, at an adjourned term of the court. The trial occupied two weeks, and its progress was watched with great interest. Every day the court-room was filled to its utmost capacity. Both plaintiff and defendant were represented by able counsel. Public opinion is greatly divided as to the justness of the verdict.

Last Saturday evening was the regular time for the election of officers in the Webster Society, and the following is the list of those elected for the remainder of the term: President, C. E. Wood; Vice-President, J. N. Morrow; Secretary, C. M. Shartell; Treasurer, J. C. Allen; Librarian, L. A. Salter; Critic, D. S. Leach. By a unanimous vote, Mr. Rushmore was elected to the office of Marshal. His long experience in the Society and his knowledge of "law" make him eminently qualified for the position.

After the election of officers, the Society resolved itself into the Senate and from that into committee of the whole, where the usual amount of filli-bustering and political buncombe were indulged in. Owing to the election of officers, the Senate did not reach the third reading and passage of any bills, and consequently we have no results to report. The election of United States Senator is still on the docket, and the Senate seems to be as far from a choice as ever. L.

The mild and pleasant weather which prevailed the first of the week was brought to a sudden close last Thursday evening. About half-past five o'clock, the wind shifted from south to north; great, black clouds rolled up from the northwest and southeast; a fearful roaring was heard, as of "a rushing, mighty wind;" and in a few moments what seemed to be a powerful tornado was seen rapidly approaching the city. On the streets, men, women and children ran hither and thither; teams were driven to places of safety in great haste; merchants hurriedly gathered int he wares which had been placed in front of their stores; and all awaited, in feelings of fear and uncertainty, the result of the storm. The city was perfectly enveloped in a thick cloud of dust. One could scarcely see from house to house. From every point of the compass, alternately, the wind blew with great force; but the storm was by no means as severe as was expected. At dark it had grown quite cold, and a steady, strong, north wind was blowing, which continued until morning.

So many powerful and disastrous wind-storms visited the country last year, destroying property and lives, and leaving nothing but ruin and desolation behind them, that one may be pardoned for the fears which are aroused by the probabilities of such a storm. Kansas is a land of extremes: nothing is too great to great happen here; and the elements are the most uncertain factors with which we have to deal.

Prominent among the public institutions of the State is the State Agricultural College, located at Manhattan, about forty miles from Clay Center. This institution also enjoys a land grant, from which it has realized an endowment fund which produces an annual income sufficient to keep it going. Under its present management, it is an industrial school in every sense of the term. The College farm, a large tract of fine land, furnishes a field for the student to indulge in practical agriculture to his heart's content. Many mechanical branches are also taught, and tuition is absolutely free.—*Clay County Dispatch.*

NATIONALIST ITEMS.

Messrs. Robinson & Little have commenced work on their new drug-store building,

Some of the maple trees were in blossom last week, and the leaves of the lilac have come into life.

We are glad to see that people all about town are touching up their premises and improving things.

Now is the time to plant trees in your yards and along the sidewalk. Do not neglect this, for a year's growth will make a great difference.

Drs. Lyman and Ward have formed a co-partnership in the practice of medicine. They are too well known to need commendation from us.

Francis Murphy spoke in the Presbyterian Church Monday evening to a crowded house. For nearly two hours he held his audience, and wound up with one of the finest bursts of eloquence to which we ever listened.

From present indications, there will be an unusual amount of building in Manhattan this season. The rise in rents and difficulty of obtaining houses at any rates has convinced renters that it is to their interest to procure homes of their own as soon as possible.

The sixth story at the new elevator is completed, the ninth addition is being added to the south side, the fourth supplement has been added to the north, and the new engine placed within. The fifth addenda is now being constructed, and looks as though it might be for monster scales. All the stone in Bluemont lies beside the building ready for a foundation to a chimney! The track is down and cars filled with lumber. The new engine is in, and gave two triumphant toots on Wednesday. A well is being dug, or has been, which reaches down so far that the Chinese were heard rejoicing over the President's veto. In fact, the elevator is not a thing of the future, but a thing that is; a rival to Bluemont and Mt. Pleasant; a monster giraffe, backing up to town, ready to take into its enormous maw all the grain of the region roundabout.

DIRECTIONS TO APPLICANTS.

TERMS OF ADMISSION.

Candidates for admission must be fourteen years of age, and pass a satisfactory examination in reading; arithmetic, through decimal fractions; and English grammar, to syntax. Classes are started at the beginning of each year in Drill in Arithmetic and Drill in English; and the pupil must have the knowledge above indicated, else he will be unable to retain position if admitted.

Pupils will be received at any time during the year, if able to pass an additional examination upon the subjects studied by the classes which they expect to enter. But they will find it greatly to their advantage to be present at the opening of each term, or as soon thereafter as posssble.

GRADES.

Both the Literary and Industrial recitations are graded daily upon a scale of 100; and an examination of all classes is made at the close of each month. A student not attaining an average grade of sixty is promptly dropped to a lower class, or excluded from the Institution until able to do so. The work of grading is strict and uniform in all the departments, and this process is rigorously used for sifting out incompetent and indolent pupils; thus more than accomplishing all that is designed to be effected by a "high standard of admission." Hence, the student's continuance in the College wholly depends upon his own action.

The course is based upon the determination to make the labor required in the preparation of one industrial and three literary recitations as much as the average student can perfectly perform, in ten hours a day. We design to give the pupil the worth of the time expended at College; and, in order thereto, he must do a full day's work with brain or hand. Only those students who can maintain a standing of ninety in each study will be allowed to take more than the prescribed number of recitations; and no one will be permitted to have less than one industrial and three literary recitations.

RELIGIOUS.

Unless otherwise directed by parents, students are required to attend chapel at 8:30 A. M. on academic days, and divine service once every Sabbath.

EXPENSES.

There are no charges whatever for enrollment, attendance or instruction in the regular courses; nor are there any "contingent fees" for the repair of buildings, for the use of books or apparatus, for diplomas, or the kindred privileges usually grouped under the term "contingent." Male students are furnished instruction, the use of apparatus, instruments or tools, in both the literary and industrial classes marked out for them, without any charge. And the same is true of female students in the regular classes provided for them. Printing and Telegraphy are industrials primarily provided for the education of female students, and male students taking either of these are charged $1 per month for use of instruments.

Instrumental music is a fine art or "accomplishment," rather than a mechanical art. We do not place it among our "industrials" in the same sense, or for the same purpose, that we do those provided for teaching the trades. Accordingly, a fee of $12 per term, or seventy-five cents per week is required from female students for tuition and the use of pianos or organs.

The only charge made for material in either the literary or industrial departments is for the chemicals used by students in laboratory practice, which are furnished at wholesale prices, and amount to but a small sum.

Furnishing an absolutely free education is as much as can be reasonably asked; and the Institution neither boards, clothes, nor supplies the student with text-books. Boarding can be obtained in private families at from $2.75 to $4 per week. Washing costs from seventy-five cents to one dollar per dozen. Text-books, which can be procured in Manhattan, cost from $2 to $5 per term.

No student need expend over $5 per week; and many of our best pupils are living at $1.25 per week. Students desiring to "board themselves" can do so at from $1 to $2 per week. In a club of four young men, renting a house, the average cost to each for the term was $1.11 per week.

LABOR.

Manual labor by the students may be for either of two purposes: First, to acquire skill in a given art; second, to earn money. In the first case, the labor is educational; in the second, it should be paid for by the party benefited.

Educational Labor.—Manual labor in the reciations of the Industrial Departments, like mental labor in those of the Literary Departments, is purely educational and will not be remunerated. While the interest of the student will be held paramount in the direction of this labor, the practice necessary to dexterity will be required.

Remunerated Labor.—When the Institution needs labor on the Farm or elsewhere which is not educational, but simply for its own profit, and which a student is able and willing to perform, it becomes an employer instead of a teacher, and he an employe instead of a scholar. It pays for work, he works for pay. The relation between them is commercial, not educational; and both parties must act upon business principles. Hence, the College furnishes only such employment as its own interests require, and will pay according to the value of the service rendered at from seven to ten cents an hour.

AMOUNT EARNED.

It is impossible to predict how much a given person can earn, since that depends upon what he can do and what work there is to be done. Hence, it is wholly impossible for us to answer the question so often asked: "Do you think I can meet my expenses by work?" Some students make one-half their expenses, some the whole, and exceptional men have made more than expenses. As a rule, a faithful boy skilled in farm work can earn half his expenses on the Farm or in the Nursery. During the year he can ordinarily acquire sufficient skill in the wood or iron shops to enable him to make articles for sale. The whole question is one for his own consideration and decision. We can teach all who come, but cannot absolutely *promise* anything more. Hitherto we have refrained from holding out strong inducements respecting the amount of labor we might have to offer; but in view of the fact that during each of the last three years we have had more to do than the students could perform, we are inclined to give greater and positive encouragement on this point. Any boy who is in dead earnest, who is familiar with farm operations, and who can raise $50 to start with, should be able to carry himself through the four years' course. And certainly this places an education within the reach of every determined boy. As yet we are unable to offer similar advantages to girls, not requiring labor in the College departments which they can perform.

RULES.

1. Behave as a true man or woman should, at all times and in all places.
2. Attend to your own business promptly, thoroughly and courteously; and vigorously let alone that of other people.
3. Penalty: "Leave!"

PUBLICATIONS.

The "Hand-Book," published in 1874, containing a full discussion of the educational question and the aims of the Institution, will be forwarded to any one desiring it.

THE INDUSTRIALIST, a weekly journal edited by the Faculty and published by the Printing Department, contains original and seasonable articles on the Farm, Orchard, Trades, Sciences, and Education. Price, 75 cents a year. Address A. A. Stewart, Manhattan.

CALENDAR.

Winter Term 1879.—Began Friday, January 3d, 1879.

TO NEW STUDENTS.

Bring the text-books you have been using. On arrival, first arrange for your boarding. A. A. Stewart, Sup't Printing Department, will furnish information, either by letter or on application, concerning boarding places or rooms for rent. Report to the President at 8:30 A. M., immediately after chapel, for enrollment.

For further information apply to Jno. A. Anderson, President, Manhattan, Kansas.

LITERARY SOCIETIES.

ALPHA BETA.—Chartered, December 26th, 1870. Meets in College building every Friday at 2 P. M. Ladies admitted. New students cordially invited to attend. W. H. SIKES, President.
MISS MARIA E. SICKELS, Secretary.

WEBSTER.—Chartered, January, 1871. Meets in Telegraph Hall every Saturday evening. Visitors, especially students, always welcome.
H. C. RUSHMORE, President.
J. N. MORROW, Secretary.

RAILROAD TIME-TABLE.

KANSAS PACIFIC RAILWAY.

PASSENGER ARRIVES.

No. 2, going East	11:14 A. M.
No. 4, going East	3:47 A. M.
No. 1, going West	5:10 P. M.
No. 3, going West	4:33 A. M.
No. 7 (freight), going West	8:15 A. M.

Nos. 1 and 2 run daily; Nos. 3 and 7 run daily except Monday; No. 4 runs daily except Sunday. Passengers with tickets are carried on No. 7.
GEO. C. WILDER, Agent.

THE INDUSTRIALIST.

SATURDAY, MARCH 15, 1879.

INDUSTRIAL EDUCATION.

The real value of an education to the student depends upon two things: First, the practical worth of the knowledge taught; and, second, the degree in which he makes it his own. Hence, the ability of any institution to give a practical education depends upon the kind and aim of the knowledge it teaches, and upon the thoroughness of the instruction therein. The State Agricultural College was directly endowed by Congress, and is guided by the State, for the specific purpose of furnishing to the industrial classes of Kansas a "practical" education, that is, "one fit for use." As its name indicates, and as the statistics of the industries of the State require, its chief work must be that of giving a useful and usable education to those who will engage in farming; and, therefore, the Farmer's Course must, from the nature of the case, be its main one.

FARMER'S EDUCATION.

Words and figures are merely instruments with which to record ideas. They are not themselves ideas, nor should they be made the chief end of an education. As a wagon is necessary to haul grain, so are they a necessary part of an education; but as the wagon is not the grain, so they are not the knowledge which the farmer converts into money. Hence, the classics and higher mathematics are not taught. But it will be noticed in the following course that so soon as the pupil acquires working skill in the use of the English language as a tool, and of figures and lines as mathematical tools, those arts and sciences which present knowledge that has a cash value to the farmer are taught as rapidly as their importance and thorough acquisition will permit. Studies numbered (1) and (4) in the second, third and fourth years are the spine of the course, to which the others are as ribs and muscle.

FARMER'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Practical Agriculture (advanced.)		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit. Economy, Practical Law.		3. Practical Geometry.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. Practical Agricul. (elementary).		4. English Structure.	
5. Agricul. Chemistry		5. Organic, Analytical Chemistry.		5. Physics.		5. Adv'd Arithmetic, Book-keeping.	
6. Logic.		6. Practical Surveying.		6. Industrial Drawing.		6. U.S. History, Industrial Drawing.	

WOMAN'S EDUCATION.

Nearly one-half of our students are females, and the Woman's Course is prepared expressly for their liberal and practical education. We have no doubt whatever that practical men and women, who understand what it means and what it seeks to do, will fully endorse it.

WOMAN'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Farm Economy, Special Hygiene.		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit'l Economy, Practical Law.		3. Industrial Drawing.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. English Literature.		4. English Structure.	
5. Phys'c'l Geography, Meteorology.		5. Organic, Household Chemistry.		5. Physics.		5. Adv'd Arith., Book-keeping.	
6. Logic.		6. Household Economy.		6. Industrial Drawing.		6. U.S. History, Industrial Drawing.	

MECHANIC'S EDUCATION.

Because of the adaptedness of the leading course to the wants of the intelligent mechanic, it has been found practically unnecessary to diverge from the Farmer's Course. Additional studies, specially adapted to the mechanic's use, will be furnished in a Post-Graduate's Course.

If it be urged that the distinctively agricultural knowledge taught in the Farmer's Course is not directly valuable to the mechanic, we reply that, admitting the point for the purpose of argument, yet: 1. This knowledge is of more practical value to the mechanic than is the Latin, Greek, or a half dozen other things embraced in the usual course preparatory to the professions; 2. That the great majority of Kansas mechanics will also be more or less engaged in agriculture; 3. That those studies in the course which are directly valuable to the mechanic, together with the shop facilities, offer a better mechanic's education than can be elsewhere found west of the Alleghanies.

INDUSTRIAL DEPARTMENTS.

Having knowledge in the head is one thing; ability to use it with the tongue, fingers or feet is quite another thing. Both are vital to success in practical life. A man might thoroughly understand the theoretical principles of carpentry, and yet, not having used the tools, be wholly unable to earn carpenter's wages. So in all other vocations. Accordingly, instruction is given in the following well-equipped Industrial Departments, and every student is required to recite in some one of them, as selected by the pupil or parent:

FOR MALE STUDENTS.	FOR FEMALE STUDENTS.
The Farm.	Dress-making.
The Nursery.	Printing.
Carpentry.	Telegraphy.
Cabinet-making.	Scroll-sawing.
Turning.	Carving.
Wagon-making.	Engraving.
Painting.	Photography.
Blacksmithing.	Instrumental Music.

Each of these departments is conducted exactly as in daily life, and aims to give precisely the drill received by an apprentice. No charge is made, either for tuition or material, from male students taking the Industrials provided for them; nor from female students taking the ones provided for them, except in the Department of Instrumental Music. Male students taking either Printing or Telegraphy are charged $1 per month for the use of material and instruments.

DEPARTMENTS OF INSTRUCTION.

DEPARTMENT OF AGRICULTURE.

PRACTICAL AGRICULTURE.

Second Year:—General principles of breeding; history and characteristics of breeds; adaptation of different breeds for special purposes and localities; implements of simple tillage; mechanical principles involved in their construction; action of the plow upon soil and subsoil; principles of draught; influence of different adjustments upon draught; use of the dynamometer; value of hoed crops in a system of husbandry; the cultivation of corn and roots; soils that need drainage; how to lay out a system of drains; house drainage; sewerage.

Fourth Year: General view of agriculture, ancient and modern; agricultural progress of the last century; relative advantages of mixed husbandry and special farming; the selection and arrangement of the farm with reference to the system to be pursued; rotation of crops; general advantages of a rotation; the best rotation with reference to disposition of labor, production of manure, and extermination of weeds; pasturage and production of grain and forage crops; manures, how best housed and applied; composting manures; commercial fertilizers; systems of feeding; stall feeding; steaming food; soiling; experiments in feeding; farm buildings; farmhouses; barns.

FARM ECONOMY.

Woman's Course, Fourth Year: Dairy products as human food; influences affecting character of milk; manufacture of condensed milk; the factory system and household plan of cheese-making; treatment of rennet; general process of cheese manufacture; subsequent t eatment of cheese; butter-making; creameries; "deep" and "shallow" setting systems; general process of butter-making; packing and preserving butter.

DEPARTMENT OF BOTANY AND PRACTICAL HORTICULTURE.

This department embraces a course of instruction in the elements of botany, structural and systematic, with a constant attention to the practical application of botany to the farm, orchard, garden, nursery and forest; also a course of lectures on Landscape Gardening. The instruction is mainly given by lectures, accompanied by regular practical drill in all the work of the fruit, vegetable and flower gardens, nursery, orchard, vineyard and ornamental grounds.

The lectures in Practical Horticulture embrace the following and kindred subjects: The relation of atmospheric motion, moisture and temperature to horticulture; seeds, the means of collecting and preserving; propagation, by seeds, cuttings, layers, suckers, grafting, budding; care of young plants; improvement of varieties; management of commercial and farm nursery; modes of pruning; the orchard; fruit suitable for orchard and garden culture; the flower, vegetable and fruit garden; importance and mode of forest culture; shelter belts and their influence; weeds and useful plants; noting the species of trees worthy of culture, either for profit or ornament.

LANDSCAPE GARDENING.

The lectures on Landscape Gardening not only unfold the accepted principles of the art, but at the same time give special attention to such applications of the art as may be made universally available in laying out and improvement of farms and the homes of the people. These lectures are accompanied by a practical drill in in the work of laying out and plotting grounds topographically.

CHEMICAL DEPARTMENT.

PHYSICS.

This includes a full consideration of the laws of mechanics, of liquids, gases and vapors, weights and measures, and specific gravity, followed by experimental study in the Physical Laboratory of the laws of heat, light, with spectrum analysis, electricity and magnetism, and the relation of these forces to plant and animal life. Text-book, Ganot.

INORGANIC CHEMISTRY.

This course is opened with a careful study of chemical forces and the laws governing chemical combination. The elements, with their compounds, are next considered in succession as to their history, properties, manufacture, and especially with regard to their uses on the farm and in the arts. These lectures are accompanied by an extended course of laboratory practice in which each student performs every experiment with his own hands. Text-book, Eliot & Storer.

ORGANIC CHEMISTRY.

This comprises a thorough study of the chemistry of the organic compounds, the composition of plants and of the various compounds derived from them. Constantly accompanied by laboratory practice.

CHEMICAL ANALYSIS.

In this course each student is furnished his stand in the Qualitative Laboratory, completely furnished with apparatus and chemicals for his own use. He here performs analyses of farm soils, plant ash, commercial manures, ores, mineral waters, commercial compounds, etc. After completing this course, he enters, if he desires, the Quantitative Laboratory, where he pursues a full course in quantitative analysis. Text-book, Kedzie's Manual.

AGRICULTURAL CHEMISTRY.

This includes a thorough consideration of the application of chemical principles to the economy of the farm; the origin and formation of soils; the classification and composition of soils; the analysis of soils and their adaptation to purposes of production; the composition and use of manures; composting; chemistry of farm operations, such as plowing, fallowing, draining, etc. Text-book, Johnson's "How Crops Feed."

METEOROLOGY.

Embracing the composition of the atmosphere; atmospheric pressure; temperature and humidity; laws of storms; rain, snow and atmospheric electricity. A full course in meteorological observations is taken under direction of the Signal Service. Text-book, Loomis' Meteorology.

MINERALOGY.

This includes the study of the laws of crystallography, with the properties, forms and uses of the principal minerals of the United States. Blowpipe analysis forms a very important part of the course, each student being required to name and identify a large series of minerals. Text-book, Dana's Mineralogy.

HOUSEHOLD CHEMISTRY.

A course of lectures on this subject is yearly delivered to a class of young ladies. The course embraces the chemistry of cooking; the composition of food; bread; tea, chocolate and coffee; butter and milk; ripening and preservation of fruits, etc.

SPECIAL COURSES

Are constantly in progress in Assaying, Pharmaceutical Chemistry and Photography.

ENGLISH LANGUAGE.

Words are simply tools used to express ideas; and, since the vast majority of our communications are made by the employment of spoken or written words, skill in using them is as profitable to the industrialist as dexterity with the needle is profitable to the seamstress. The direct aim of the course is to make the student skillful and intelligent in handling the machinery called language, just as an engineer handles a locomotive; and no drill will be omitted, or effort spared, to gain this end. Apart from the course itself, which is far more practical and complete than that usually found in literary colleges, the constant attention given this subject by all the departments, and especially the practice required in the printing classes, affords superior advantages to the student.

DRILL IN ENGLISH.

"As grammar was made after language, so ought it to be taught after language."—*Herbert Spencer.*

Drill in English embraces the following topics:

Sounds of the language; drill in producing the vocal, sub-vocal and aspirate elements with accuracy, distinctness and volume; vowels, consonants.

Letters: Form; power; rules for spelling, drill.

Words: Signification, properties, modifications, variations, relation and dependence.

Sentences: Drill in statement of ideas; description, clearness, terseness, vigor; business letters, discussion; capitalization; syllabication; punctuation; construction and analysis of sentences; elements, uses and names; criticism of compositions printed as written; proof reading; grammatical construction; superfluous words and clauses; drill in reading, speaking and penmanship.

Text-books: Webster's Academic Dictionary; Lee & Hadley's Advanced Lessons in Language.

Pupils deficient in spelling, etc., should enter the printing class, the printing-office being the work-shop of language.

STRUCTURE OF ENGLISH.

ELEMENTS OF WORDS.—The end aimed at in this study is to learn everything about words which will aid in their effective use. Among the topics included are:

Roots: What are they; their origin; their force and value as an element of language; the manner of their growth into different parts of speech.

Stems: Their derivation; their offices and properties; their relation to other parts of words.

Prefixes and Suffixes: The several sources whence derived; the relation of their force or significance to those sources; explanation of the laws and principles governing their use along with stems.

Compounds: Their value; their properties and uses; the laws governing their formation.

Synonyms: Definitions; causes of their abundance in English; the principles to be observed in choosing among them, to express a thought.

Criticism: This constitutes a prominent part of the exercises of the pupil through his whole course in the study of English. It not only diversifies and enlivens the class-room exercise, but reduces to practice the principles of the structure of the language. By this means, the student acquires not only a knowledge of English, but readiness and accuracy in speaking or writing it. The exercises in criticism embrace not only examination of selected matter, but original composition.

ELEMENTS OF SENTENCES.—The purpose in view in studying this subject is not to traverse the ground gone over in the study of grammar, but to fix in the mind of the student a clear understanding and remembrance of names, the properties and offices of the several classes of words entering into an English sentence, by showing him the reason of things; to make more simple, as well as interesting and practically useful, a study otherwise "dry and unprofitable" in many cases, by explaining the reason of the verbal forms and changes, the rules and maxims he is to remember and observe in his use of language. In the same manner he is conducted through a study of the mutual relations and dependencies of the several elements making up a sentence.

MATHEMATICAL DEPARTMENT.

Figures and lines, like words, are only instruments with which to convey ideas, or perform operations that cannot be easily done without them. The arithmetical principles used in business are few and simple; but accuracy and rapidity in computation are only gained by practice. College graduates often fail to retain clerkships, not because they do not know *why* given operations are performed, but because they can neither add, multiply or divide with that habitual correctness which renders their work reliable.

DRILL IN ARITHMETIC.

The chief design of this study is to make the student expert in the use of numbers, as employed by the industrialist for profit. The occupation of a successful farmer demands the application of every principle of practical arithmetic, and is taken as a starting point, rather than that of an abstract system. Beginning with a simple cash account, book-keeping is gradually developed to the full extent of its real utility. The areas of fields, expense of crops, construction of houses, sales of produce, and investment of capital, involve all the fundamental operations, and those of profit and loss, commission, taxes, insurance, exchange and stocks. Following this line, the student, so far from hammering away at "pure" science draws from the mathematical store-house what he needs, and sees why he needs it. Accuracy of calculation and posting, rather than a *mere* comprehension of the principles, is aimed at. Besides the recitation-room drill in business forms, practice in the field is also given. Estimating the number of cords in a pile of wood said to be 100x4x4 feet is one thing; measuring a pile of wood through which any number of cats may be harmlessly thrown, and in which four-feet sticks are the exception, is quite another and more difficult thing.

ARITHMETIC AND BOOK-KEEPING

Is a continuation of the above, having the same purpose and adopting such methods as the necessities of the class indicate. Thorough instruction in the principles and forms of business law is given. It will be seen that this method of teaching book-keeping, besides ensuring arithmetical practice, develops practical skill in that important art.

ALGEBRA.

Algebra is included in the course as a preparation for the study of Surveying.

DRAWING.

The practical value of Industrial Drawing can hardly be overestimated, first, because its study is the best drill for the development of the perceptive faculties, which are the ones most employed in daily life; and, second, because the working classes make a far greater use of lines than they do of figures. A farmer follows a line when laying a straight furrow; the carpenter uses the square and rule twenty times as often as he does figures; and a woman in cutting a pattern, or deciding that one bonnet is prettier than another, does so by the line or "form." So that either in its direct application, or in the exercise of that taste which comes from skill in using lines, this branch of mathematics is quite as important as a means of "mental discipline" as is the branch of computation, and is of far greater daily use. The admiral system of Prof. Walter Smith, Art Director of Massachusetts, is thoroughly followed through the grades of Free-hand, Geometrical, Object, Model, Perspective, Mechanical and Topographical Drawing, during the terms indicated by the Course of Study. In addition, constant practice in the application of lines to metal and wood is furnished in the Blacksmith, Carpenter, Turning, Scroll-sawing, Carving, Engraving and Printing shops, and to fabrics in the Sewing Department.

PRACTICAL GEOMETRY.

Not one farmer in a thousand ever uses the transit in surveying his land, the testimony of the county surveyor being decisive in court; but every farmer makes countless applications of lines and angles in laying off fields, roads, gardens, planning houses, determining levels, etc. The object of Practical Geometry is to teach the properties and uses of angles, and to make the student skillful in the application of lines to the field by the use of such simple instruments as are always within reach, or within his ability to construct; and accurate in the transferring of plans to the grounds, board or block.

PRACTICAL SURVEYING.

The drill in the use of figures and lines given by the mathematical course as above indicated, renders the mastery of surveying an easy task. There is no calculation made or formula used by the working engineer which cannot be readily understood and performed by a skillful arithmetician after proper instruction. The hand-book of the engineer is accordingly supplemented with such special guidance as is found necessary for a full comprehension of the mathematical principles and their applications; and extended field practice is required in the use of the compass, level, transit and theodlite.

THE INDUSTRIALIST

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Address A. A. STEWART, Manhattan, Kas.

Report of Woman's Industrial Department.

To the Board of Regents of the Kansas State Agricultural College:

GENTLEMEN: — I submit to you the following report of work and instruction in the Sewing Department for the period of one year and a half.

Since my last report, in November, 1876, fifty-eight students have been taught in the different branches of ordinary family sewing, by hand and machine; and a number of dresses have been made by the students, from their material, for their own wear. There has been taught an elementary course of blackboard exercises, beginning with straight lines and curves used in designing patterns, for those who wish to make themselves proficient as dress-makers. Ten have been thoroughly drilled in cutting and fitting by chart, and are thereby competent to earn a livelihood, if necessary. There are at present four sewing machines in the department; viz., Wheeler & Wilson, Wilcox & Gibbs, Secor, and the American.

HYGIENE.

The class in hygiene has been necessarily small. This is a study of which too little is made. From the standpoint gained by my limited experience, I am prepared to assert that health and long life are possible to many of those who die before they reach the years of maturity. The *central thought* kept before the class is, that they should be the living exponents of the knowledge gained by this study. The leading minds in our own country and Great Britain are keenly alive to the advantage derived from a study of the science of hygiene; also, the acquirement of knowledge requisite to the practice of sanitation. Women should be prepared, and feel the need, too, of teaching children more about themselves.

HOUSEHOLD ECONOMY.

Two classes have been taught in the kitchen laboratory, numbering nine and four. The subjects treated upon by lectures are as follows: "Household Management and Economy;" "The Management of Children, and their Primary Instruction;" "A Knowledge of the Laws of Health, and Nursing the Sick." Particular attention is given to the economical use of all foods, and the method of preparation for the proper nutriment of the body. In as far as possible, this is *practical* work in the kitchen. The young ladies in these classes have manifested a zeal far beyond my expectations. Many of the ladies of Manhattan, and some of the prominent gentlemen, have taken an interest in the advancement of this study, and appreciate the difficulties of introducing it as a study,— for which I heartily thank them. The day is not far distant when this "hobby"— as some are pleased to call it — and the study of hygiene will be prominent among the studies for women in our leading colleges.

Napoleon once asked, "What is needed to secure the prosperity of France?" The answer was promptly given by a woman, "Good mothers." If it was true of France, it is no less true of America. Let the education of women be such as relates to practical life and the promotion of health. Man is omnivorous, and must be fed accordingly. Food is the most important of our wants; we cannot exist without it. The man who does not use his brain to select and prepare his food, is not above the brutes that take it in its raw state. It is to the physique what education is to the mind. Good and well-prepared food beautifies the physique, the same as good and well-directed education beautifies the mind.

"We may live without poetry, music and art;
We may live without conscience, and live without heart;
We may live without friends, we may live without books —
But civilized man cannot live without cooks.
He may live without books — what is knowledge but grieving?
He may live without hope — what is hope but deceiving?
He may live without love — what is passion but pining?
But where is the man that can live without dining?"

—*Lucile.*

Respectfully submitted.
MRS. M. E. CRIPPS.
Manhattan, Kas., June 30, 1878.

Farming for Profit.

In farming for profit, experience must in the main be the guide. But few farmers can afford to speculate. If one has the knack of seizing upon favorable opportunities when they occur, such a person and such a farmer will make farming a success. In farming for profit, economy is necessary. Not economy in one thing, but in several. Farming operations should be planned with a view of saving time. An economical application of time, combined with method in everything done, will afford leisure for investigation and enable us to do thoroughly whatever we undertake. Thoroughness is the key to success. Good, sound common sense begets this. The lack of common sense is fatal to success in any pursuit, especially in farming with a view to profitable results. Probabilities must be well weighed before new ventures are indulged in.

In farming for profit, the man will succeed best who puts thought into everything he does. Such a farmer is constantly striving to ascertain by reading, observation and conversation some better way of doing things than he is now practicing. He must become, as the *Scientific Farmer* says, a manufacturer. But how must the farmer manufacture? In the first place, he has the natural fertility of his soil, as the mill has its water privilege. Next, he must obtain his raw material at the cheapest rates: the waste fertilizers of the farm; the getting the most fertilizers, from the cattle fed, that a judicious knowledge of food and animal growth will allow; the purchase of additional fertilizers, if thought best, at the lowest prices and of the quality best adapted to the use for which it is to be applied. Next, he must obtain the most work from his men and machinery, and must apply the labor at the right time and in the proper manner. He must combine all his resources in the best way to accomplish his results; the best seed, sufficiency of fertilizer, the right quantity of labor.

When the job is completed, and the goods, in the form of salable products, secured, he must seek the best market for him, and secure his pay. Even this is not the end. He must see that his manufactory is not deteriorating, and that it is left in proper condition for producing another batch of goods. If his goods are not adapted to his market, a failure of obtaining a profit must ensue. If his expenditures are excessive, the profit must likewise be diminished or cut off. Hence, like the manufacturer, he must calculate and decide in advance of the market.—*Grange Bulletin.*

IN Oregon, early one morning recently, a forest of pine trees was seen bending down, as though bowed by a terrific gale of wind. At the same time not a breath of wind was in motion. During the previous night a furious storm had passed over the forest, accompanied by rain and snow, and the steady force of the wind had bent the trees and held them in that position until the falling snow and the freezing ice had fastened them in unyielding bonds of ice; and so they remained till the sun set them free.

Professors of Agriculture.

It may be that the "hard times" are a blessing in disguise, a piece of trite philosophy we are all familiar with, and a benediction that every one had rather see conferred on almost any one else's than his individual head. How to keep the boys on the farm probably comes nearer being solved by the pressure of the times than any device yet discovered. The proverbial smart boy of the family has little inducement to seek the city and a clerkship, or cast himself and future fortunes into the struggling mass which chokes the channels of professional life.

The farm is likely, at last, to receive its share of the best nerve and brain of the present generation, along with its portion of that higher and better education which the professions and arts have heretofore monopolized almost entirely. The graduates of colleges have come out filled with the mysteries of the dead languages, metaphysics, theology and law. The school-man has floated up through the ages, unable to free himself from the meshes of kingcraft and priestcraft; and the pupils he graduates are exact copies from one mold, having a foundation prepared and fitted only for a superstructure of theology, law or medicine. Military schools have thoroughly taught the art of scientific murder; polytechnic schools have provided skillful engineers as assistants. Most scholars who have left their impress on the age in which they lived have turned abruptly aside from the beaten path in which their school training had placed their feet, and have, by sheer force of character and natural parts, hewn the way in which they traveled to great usefulness.

In all this struggle with the ages, agriculture has been constantly thrust aside with a fragmentary education, and used as a pack-animal to bear the burdens of society; — a society manufactured by the school, and to a large extent wasteful and almost wholly non-producing.

But that patient mother of the race and nurturer of the arts and sciences, is now beginning to insist on a change in education, in which a fair share of the best brains shall be retained with her, and that schools shall be established from which graduates in agriculture will issue: an education that can be measured by its money's worth, and that money's worth estimated by its producing power of that from which all life is evolved.

To this advanced position taken by agriculture, the able and earnest corps of agricultural journals has assisted more than any other force. Through them agriculture has made its most powerful appeals. Their irresistible logic and arguments for the rights of the farm have been heard in the high places of power, and commanded attention. Slowly but surely the Chinese walls which kings and priests, through the ages, have builded about the schools, have been penetrated; and the dummies set up to command the reverence of the multitude have been rudely thrust aside, and the age is demanding, with a power that will not longer be denied, that the fountain of knowledge shall be used to promote an education the value of which shall be estimated by its producing power.

Keep the boys on the farm, and give agriculture its fair share of the best brains of the growing generation, by establishing colleges which will graduate professors of agriculture who, in the eyes of the multitude, will be the peers of the D.Ds., LL.Ds. and M.Ds., and the fond parents of the smart son will be less eager to thrust him into the "professions."—*Kansas Farmer.*

WEEDS cost more than labor, and, like evil habits, feed upon their growth.

THE INDUSTRIALIST.

SATURDAY, MARCH 22, 1879.

E. M. SHELTON, Managing Editor.

ASSOCIATE EDITORS, MEMBERS OF THE FACULTY.

The "Color Line" in Stock-Raising.

There is no race of cattle whose characteristics are better defined, or which is better entitled to the distinction of a breed, than the Short-horns. In size, length of horn, quality of flesh, and general form, the Short-horn characteristics are distinctive and unmistakable. But, in the matter of color, the Short-horn varies; and, while the north Devon is always red and the Galloway and Angus black, a pure Short-horn herd may possess a medley of colors, within a certain range, without being liable to the charge of impurity, or even to possessing mixed characters. The original Short-horns, it should be remembered, varied greatly in the matter of color; some being pure white, others roan, or red and white, while pure reds were quite unknown. Thus, the celebrated sire of Duchesses, Belvidere (1706), was a yellow roan; 2d Hubback (1423), an equally celebrated sire, was a yellow red and white; Matchem Cow was a pure white; and Cemet, who in 1810 sold for 1,000 guineas, was a light roan.

It is only in America, and within recent years, that this mania for red Short-horns has arisen; and it is not too much to say that it is working this noble race of cattle a greater injury than was done by the speculative era of a few years ago, or the pedigree craze now so fortunately abated. The effect of this popular bias for reds is familiar to every breeder. A red bull, whatever are his qualities, is a quick sale at a good price; like charity, the red hair "covers a multitude of sins." On the contrary, a roan or white,—both pure Short-horn colors,—however excellent the animal, is nearly always unattractive, and only sold after much haggling. These are the facts, much as they are to be deplored, and their inevitable tendency is to bring the Short-horn race to a uniform standard, as to color, to the neglect of those sterling qualities which have given to the Short-horns the world-wide celebrity they now enjoy. While the breeder of red Short-horns is fixing his favorite color, he can hardly fail to lose the animal. Moreover, we have no hesitation in saying that red Short-horns are already generally inferior animals as compared with roans and other light colors, and especially in the all-important matter of "touch." The hair of these confirmed reds is nearly always coarse and wiry, and they lack in that most essential character—a mellow, elastic hide.

The young breeder especially cannot afford to commence business with these absurd "color prejudices" as a part of his stock of practical maxims. He should hold, as a cardinal article of his faith, with Bakewell and all other great breeders, "that all is waste that is not beef." He may have "fancy points" towards which he leans, but he must look to it that these points are either of themselves valuable, as a deep loin, or, as in a mellow skin, indicative of valuable qualities.—*E. M. S.*

Experiments on the College Farm, 1878. No. I.

FERTILIZERS APPLIED TO WHEAT.—The object of this experiment, as might be inferred from the heading, is to ascertain the influence of some of the commonest fertilizers, when applied to winter wheat. To this end, twenty plats were staked off in field No. 4, west of old College barn, and to these, farm-yard manure, ashes and plaster, were applied as a top-dressing.

This field has not been manured since 1872 or 1873, and since has been cultivated continuously, growing a crop of grass or millet every year. The soil is a heavy, clay loam, one to four feet in depth, resting on a subsoil of tenacious clay. Each plat was two rods in width by four in depth, and a double row of these ranged north and south with the slope, which was quite gradual from south to north. The plats were separated by vacant spaces two feet in width, which were kept free from weeds by hoeing; and the plats to which fertilizers were applied, in every case alternated with plats which received no special treatment, and which, for convenience, we call "nothing plats." All the fertilizers were applied about the time of seeding (September 15th), three plats receiving farm-yard manure at the rate of ten cords of well-rotted manure per acre; three, unleached ashes at the rate of fifty bushels per acre; two, plaster at the rate of ten bushels per acre; and one, ashes and plaster in the same proportions as when applied singly.

On account of a partial failure in seeding, one of the nothing plats, and one to which ashes was applied, are rejected from the following computations. The yield of the different plats per acre, and the proportions of the straw and grain, are given in tables Nos. 1 and 2.

TABLE NO. 1.

Material used.	*Yield per acre—Bushels.*	*Yield per acre straw—Pounds.*	*Straw, lbs. to 1 bushel grain.*
Manured plats	38.8	6,311	162
Nothing plats	39.7	6,249	157
Ashes plats	42.8	6,920	161
Plaster plats	38.7	6,236	160
Ashes and plaster	37.1	6,630	178

In table No. 2, the yield of the differently-treated plats is given as before, and in addition the yield of the nothing plats *adjacent* these. Thus the "adjacent," in "nothing plats adjacent," in this table, refer to the plats in the column above.

TABLE NO. 2.

Material used.	*Yield per acre—Bushels.*	*Yield per acre straw—Pounds.*	*Straw, lbs. to 1 bushel grain.*
Manure	38.8	6,311	162
Nothing plats adjacent	39.6	6,232	157
Ashes	42.8	6,920	161
Nothing plats adjacent	39.4	6,640	168
Plaster	38.7	6,236	161
Nothing plats adjacent	38.8	6,220	160
Ashes and plaster	37.1	6,630	178
Nothing plats adjacent	42.8	6,330	148

The results of this experiment correspond very closely with a similar one made upon the College farm in 1876, and neither is reassuring to the farmer who is disposed to "farm high" for wheat. Nevertheless, it should be borne in mind: (1) That in no system ought manure to be applied directly to wheat; it should be applied to some coarse-leaved plant like corn, and the wheat be allowed to get the benefit of this one or two years later. (2) The soil in which this experiment was tried was very fertile, despite the five years of continuous cropping to which it had been subjected, and the very wet season of last year was well calculated to cover the effects of the manures. Had the soil been much less fertile naturally, or had the season been very different, especially had it been dry, very different results might have been expected. The entire crop of the field in which this experiment was conducted, was a very large one, averaging 36½ bushels per acre, the straw averaging nearly five feet in height. The variety employed was the Red May.—*E. M. S.*

HE has fat cattle who feeds them. And he has fat acres who feeds them with a liberal hand.

Education in Switzerland. No. IV.

The Swiss high schools, called county or secondary schools, differ little from ours, except that French and—in many of them—English are taught instead of Latin. Practical geometry, physics and drawing receive more attention, too, than with us; thus giving these institutions a popularity among the industrial classes that is missed in the United States. The courses cover three or four years, and pupils must be twelve years old before they can enter. Gymnastics, and, in many, also military tactics receive increasing attention. In two or three cantons, parts of the civil laws are read one or two hours per week.

Besides these county schools, there are provisions made in most cantons for evening schools. Any regular teacher that can raise a class of sixteen or twenty men over sixteen years of age, and have them meet in the school-room, at half-past seven, three evenings in a week, can get an appointment from the superintendent of public instruction as evening school teacher. The branches taught in these schools in Solothurn, where I have visited many, are history of the "Vaterland," civil law, geometrical drawing, book-keeping, and agricultural chemistry. This last-named study is not strictly chemistry, but rather a series of lectures, from a set of text-books, on gardening, horticulture, physiology of plants and animals, and agriculture in general. The regulations concerning the plan of instruction are not strict. The teacher or the student can by vote substitute other studies for those laid down in the curriculum. As a compensation, the teacher receives from the State, for this extra work, from twenty-five to fifty francs a winter. In many districts these schools are doing good work, and they offer a splendid opportunity to young teachers to make themselves popular. It must be acknowledged, however, that the very classes that would benefit most by these schools, the ones most in need of a better education,—farm hands and laboring men,—are seldom found there.

In referring to Fellenberg's great educational institution, at Hofwyl, I can do no better than to make a few extracts from what Henry Barnard says on that subject:

The great educational establishment of Mr. Fellenberg, at Hofwyl, in the canton of Berne, has attracted more attention, and exerted a wider influence, than any one institution in Europe or America, during the present century. It originated in motives of patriotism and benevolence, about the year 1805, and was sustained for forty years by personal efforts and pecuniary sacrifices on the part of its founder, which have never been equalled among men of his wealth and social position. Born to every advantage of education which wealth and rank could secure, advanced early to positions of trust and influence in public life, enjoying extensive opportunities of observation by travel in the most refined nations, thrown by political convulsions of his country and Europe, from 1790 to 1805, much among the people and their rulers, Fellenberg became convinced that improvement in *early education* was the only resource for the permanent strength and elevation of the state of his own and other countries. To this object, at the age of thirty-one, he consecrated himself and his fortune. Being possessed of ample means, he resolved to form on his own estate, and on an independent basis, a model institution, in which it should be proved what education could accomplish for the benefit of humanity. Out of this determination arose the Institution at Hofwyl.

He commenced with two or three boys from abroad, with his own children, in his own house; and from time to time received others, but never more than two or three new pupils at once, that they might fall insensibly into the habits of the school, without producing any effect upon its general state. In 1807, the first building was erected for the "Literary Institution," and the number of pupils increased to eighty, mostly from patrician families. During this year he projected an institution for indigent children, and employed Vehrli, the son of a school-master of Thurgovia, in the execution of the plan, after training him in his own family. The farm-house of the establishment was assigned for this school, and here Vehrli received the pupils taken from among the poorest families in the neighborhood. He left the table of Fellenberg, and shared their straw-beds and vegetable diet, became their fellow-laborer on the farm, and companions in hours of relaxation, as well as their teacher, and thus laid the foundation of the "Agricultural Institution," or "Poor School," in 1808. The principles on which this school was established, were to employ agriculture as the means of moral education for the poor, and to make their labors the means of defraying the expense of their education. In this institution, Vehrli attained that practical knowledge of teaching which fitted him for his higher work in the Normal School at Kruitzlingen.

About the same time a school of "Theoretical and Practical Agriculture" for all classes was formed and provided with professors. To this school several hundred students resorted annually. In the same year, Fellenberg commenced the formation of a normal school, or seminary for teachers, at his own expense, inviting one of the most distinguished educators of the day to conduct it. Forty-two teachers, of the canton of Berne, came together the first year, and received a course of instruction in the art of teaching. So great was the zeal inspired by the liberality of Fellenberg, and the course of instruction, that the teachers were content to prolong their stay beyond their first intention, and to lodge in tents, in lack of other accommodations on the premises. Owing to some jealousy and low party intrigue, the government of Berne interfered with his plan of bringing the teachers of the canton annually together for a similar course, and henceforth the benefits were open only to teachers from other cantons, and to such as belonged to the School of Agriculture. * * * * *

From 1810 to 1817, Fellenberg's establishment attracted the attention of educators and statesmen in Switzerland and all parts of Europe. Pupils were sent from Russia, Germany, France and England. Deputations from foreign governments visited it, to learn especially the organization of the School of Agriculture, and the Poor or Rural School. In 1815, a new building was erected to accommodate the increasing number of the Agricultural School, the lower part of which was occupied as a riding-school and gymnasium. In 1818 another building became necessary for the residence of the professors, and the reception of the friends of the pupils; and, soon after, a large building, now the principal one of the establishment, with its two wings, was erected for the Literary Institution, which furnished every accommodation that could be desired for health or improvement. In 1823 another building was erected, in the garden of the mansion, for a school of poor girls, which was placed under the oldest daughter of Fellenberg; and in 1827 the Intermediate or Practical Institution was established. * * * * *

The Practical Institution, or "Real School," was designed for the children of the middle classes of Switzerland, and not solely for the same class in the canton of Berne, aiming thereby to assimilate the youth of the whole country into common feelings and principles of patriotism, by being educated together, and on one system. The course of instruction included all the branches which were deemed important in the education of youth not intended for the professions of law, medicine and theology. The pupils belonged to families of men of business, mechanics, professional men, and persons in public employment, whose means did not allow them to furnish their children an education of accomplishments, and who did not wish to have them estranged from the simplicity of the paternal mansion. In view of these circumstances, the buildings, the furniture, the table, and the dress of the pupils, were arranged in correspondence to the habits in these respects of their families at home. In addition to an ordinary scholastic course, the pupils were all employed two hours in manual labor on the farm, in a garden plot of their own, in the mechanic's shop, and in household offices, such as taking care of rooms, books and tools.—*J. D. Walters.*

THE INDUSTRIALIST.

SATURDAY, MARCH 22, 1879.

The Alpha Beta Society has lately added to its library Holland's "Bitter Sweet" and "Seven-oaks," two valuable and very entertaining books.

Prof. Ward was one of the Murphy temperance party which went out West on Tuesday to "view the landscape o'er." He came back astonished at the rapid settlement of the western counties, and now has more faith than ever in Kansas.

The excursion trip given by the Kansas Pacific Railway to Francis Murphy and some of his temperance friends, was truly an enjoyable affair. Not a thing occurred to detract from the pleasure of the trip, except the absence of a few who had been invited. The party were taken to Buffalo, Gove county, three hundred and fifty miles west of Kansas City.

Clarence E. Wood was "surprised" the other evening by his fellow-members of the Senior Class. The intruders were cordially received and royally entertained. When the evening had almost gone, Clarence was again surprised — completely taken back — by the presentation to him of an elegant copy of Longfellow's poems, with the kind regards and good wishes of his class-mates.

Prof. VanDeman went down to Geneva on Tuesday last to be present at the marriage of his brother-in-law, Mr. J. W. G. McCormick, to Miss Eva L. Howard. Mr. McCormick, who was once a student of the College, will please accept our thanks for cards. May he and his bride be abundantly blessed in this "new departure." Prof. VanDeman returned on Thursday, accompanied by his wife and baby, who will remain here a few days.

The relatives and friends of the late Mr. John House have the sympathy of the entire community in their sad bereavement. Father House, as he was familiarly called, has lived in Manhattan for a number of years, and was loved and respected by all. For sixty-eight years he has traveled the rugged path of life, but his footfall will be heard no more. The funeral services were held in the Christian Church this afternoon, in the presence of a large assembly of people.

A few weeks ago the death of the mother of Mr. C. M. Hulett, a member of the Senior Class, was announced in these columns. A few nights ago Mr. Hulett was again called home, this time on account of the sickness of his father. We learn that shortly after Mr. Hulett reached home his father died, leaving to the son the care of the family and estate. Mr. Hulett has been one of our best and most reliable students, and we but speak the universal feeling of Faculty and students when we say that in his hour of great trial he has the hearty sympathy of all connected with this institution.

The third volume of the American Berkshire Record has recently been received. In binding, this number is uniform with the two preceding volumes, which is equivalent to saying that it is a handsome, serviceable-looking book. The typography, paper and binding leave nothing to be desired; while the plate pictures, three in number, are much less "idealized" than in the other volumes, and must be called, according to the present state of art, first-rate. The third volume contains 1,350 pedigrees, and we are glad to notice that 88 of these are from Kansas. The utility of this record of pedigrees is now generally acknowledged; and we trust that our breeders will see that it is to their interest to own a complete set of this work, as well as to record in its pages.

Trego county, which a few years ago was interesting only to enthusiastic collectors of fossils, is rapidly filling up with adventurous immigrants, mostly from the Eastern States. One party showed his faith in the country by seeding five hundred acres to wheat last fall. There is no question but that the soil in Trego and Gove counties is fertile. It is a deep, clay loam. In favorable seasons, good crops of wheat can be raised; but farming so far West is hazardous business. The immigrant to Kansas from an older State had better settle in the eastern half of the State, and leave the West to the cattle men and the professional pioneer. In time, Trego and Gove may become as celebrated as Saline and Dickinson as wheat-producing counties; but we do not believe that is in the near future. W.

The Websters met as usual on last Saturday evening, several visitors being present. The officers elected at last meeting were duly installed. The retiring President, Mr. Rushmore, delivered a short valedictory, and President Wood favored the Society with a very sensible inaugural. Still they come! Under the head of initiation of candidates, Messrs. Reynolds, Hartmann, Donaldson and Kingsbury were made Websters, with all the privileges pertaining thereunto.

After selection of question and assignment of duties, the Society resolved itself into a Senate. When the usual preliminaries had been disposed of, the Senate went into committee of the whole on Senator Wood's bill to stop the sale of intoxicating liquors. A spirited debate ensued, during which there were consumed several brain-loads of that explosive material called eloquence. The bill was finally defeated.

The Senate and House, in joint session,—our imaginations stretching until their elasticity was exhausted in the attempt to believe that the House was present,—on the first ballot, elected Hon. Irving Todd United States Senator for the ensuing six years. As soon as the vote was announced, a cry of fraud was raised, and by motion a committee of five was appointed to "investigate." It is supposed that the committee will spend a couple of weeks smelling around after "fraud." This makes four investigating committees, all of which are at work.

The Senate adjourned *sine die*.

The following is the question for debate next Saturday evening: "*Resolved*, That the best interests of the State demand that the proposed amendment to the Constitution be adopted." Affirmative, N. A. Richardson and D. S. Leach; negative, S. C. Mason and Irving Todd. Select reading, W. S. Myers; declamation, M. A. Reeve. The Webster *Reporter* will be presented by C. E. Wood. A general good time is expected. All are respectfully invited to "drop in." L. *pro tem.*

NATIONALIST ITEMS.

The K. P. R. R. has surveyed a route for a track from Wamego to Louisville.

Second street, between Poyntz Avenue and Humboldt street, is being graveled.

Mr. Kern, with six workmen, is to make the depot park one of the pleasantest places in town. Now for trees to be set out on every street and around every warehouse.

Rev. J. D. Daugherty, of Ottawa, will lecture at the Congregational Church on Thursday evening, March 27th. Subject: "Children's Rights." Admission, 25 cents; students, 15 cents.

Our Congregational friends have shown great pluck and perseverance in enlarging their church building. It looks very nice inside, and will hold considerably more than any other church in town, except the Presbyterian.

The passenger train West, last Friday, was so heavily laden with immigrants that it became necessary to make two sections of the train. The passengers seemed to be of a good class, many of them stopping here, to view the promised land.

Mr. T. J. Jenkins has commenced to build a stone residence on the corner of Houston and Fifth streets. As nearly as can be stated, its dimensions will be 36x37 feet, with a six-foot cellar under all. When completed, this building will be an ornament to the town.

INDUSTRIAL EDUCATION.

The editor of the Junction City *Tribune*, referring to his recent visit to the College while attending a meeting of the Breeders' Association, shows in a striking way the change that late years have wrought in what are called the studies proper to higher institutions of learning:

While listening to that discussion on "Shorthorns," by farmers and others, in a State College class-room, we felt jubilant over the progress made in the change of educational subjects. A generation ago, the subject would probably have been "the Greek accent," or the euphonies of the "Attic dialect" as compared with the rougher speech of Macedonia or Italy. And if a farmer entered the arena, it would have been with gaping mouth and staring eyes, wondering at the erudition which he could never hope to fathom.

As we sat there and listened to that discussion on the rearing of God-created farm animals, and the laws of development and perfection, by practical men of means and intelligence, we thought of our twelve-years' struggle in favor of an "industrial college in each of the several States." We felt amply repaid for the labor and thought, and deeply thankful to the immortal Lincoln for signing the bill in 1862 which had been vetoed by Buchanan in 1858. The venerable Turner, of Illinois, conceived the idea, and was the champion of the movement. We wish he could visit our institution at Manhattan, and become acquainted with Prof. Shelton and the rest of the live men there; as we have an idea that the Kansas Agricultural College will compare well with the very best schools of its class in the United States.

A correspondent of the Holton *Recorder*, after writing up Manhattan and its pleasant surroundings, takes occasion to express his views on the Agricultural College in this wise:

It has been our privilege to make a thorough examination of the Agricultural College and its workings, which is located here. We had heard a great deal about this Kansas institution, but found upon visiting it, like the Shebean queen, "the half had not been told." It is something that every Kansan can point at with a just pride. It is truly an honor to our young commonwealth. The buildings, several in number, are situated about a mile from the town, on an eminence overlooking the surrounding country for many miles. The site was well chosen. One large building has lately been completed at a cost of $12,500, and is now occupied. As they have been cramped for room, this last addition is greatly appreciated by the College folks. There is yet too little room. Another building is very much needed, and we hope our Legislature will be wise and liberal enough to appropriate funds for that purpose. Professors Ward, Shelton, VanDeman, Platt, and many others were hard at work with their various classes of interesting and intelligent-looking youths. In the various industrial departments, mechanical, printing, telegraph, blacksmithing, etc., we found the students systematically and busily at work under the supervision of competent instructors, all being qualified for practical life and to become useful citizens. The young ladies are here taught household economy and sewing, by Mrs. M. E. Cripps; instrumental music, by W. L. Hofer; botany and horticulture, by Professor VanDeman; and other industrials by the heads of those departments. We didn't observe any ladies learning blacksmithing, but we found them in nearly all the other departments working as busy as bees. Work, work, work, is the watchword throughout the College. About 160 students are in attendance. Nearly every county in the State and several States are represented here. The College farm, of nearly 300 acres, is in excellent condition. Prof. Shelton takes great delight in showing visitors the farm, its fine orchard, and stock. Here is kept some of the best stock in the West, which greatly contributes to the support of the College. We left, feeling that "it was good to be there."

DIRECTIONS TO APPLICANTS.

TERMS OF ADMISSION.

Candidates for admission must be fourteen years of age, and pass a satisfactory examination in reading; arithmetic, through decimal fractions; and English grammar, to syntax. Classes are started at the beginning of each year in Drill in Arithmetic and Drill in English; and the pupil must have the knowledge above indicated, else he will be unable to retain position if admitted.

Pupils will be received at any time during the year, if able to pass an additional examination upon the subjects studied by the classes which they expect to enter. But they will find it greatly to their advantage to be present at the opening of each term, or as soon thereafter as possible.

GRADES.

Both the Literary and Industrial recitations are graded daily upon a scale of 100; and an examination of all classes is made at the close of each month. A student not attaining an average grade of sixty is promptly dropped to a lower class, or excluded from the Institution until able to do so. The work of grading is strict and uniform in all the departments, and this process is rigorously used for sifting out incompetent and indolent pupils; thus more than accomplishing all that is designed to be effected by a "high standard of admission." Hence, the student's continuance in the College wholly depends upon his own action.

The course is based upon the determination to make the labor required in the preparation of one industrial and three literary recitations as much as the average student can perfectly perform, in ten hours a day. We design to give the pupil the worth of the time expended at College; and, in order thereto, he must do a full day's work with brain or hand. Only those students who can maintain a standing of ninety in each study will be allowed to take more than the prescribed number of recitations; and no one will be permitted to have less than one industrial and three literary recitations.

RELIGIOUS.

Unless otherwise directed by parents, students are required to attend chapel at 8:30 A. M. on academic days, and divine service once every Sabbath.

EXPENSES.

There are no charges whatever for enrollment, attendance or instruction in the regular courses; nor are there any "contingent fees" for the repair of buildings, for the use of books or apparatus, for diplomas, or the kindred privileges usually grouped under the term "contingent." Male students are furnished instruction, the use of apparatus, instruments or tools, in both the literary and industrial classes marked out for them, without any charge. And the same is true of female students in the regular classes provided for them. Printing and Telegraphy are industrials primarily provided for the education of female students, and male students taking either of these are charged $1 per month for use of instruments.

Instrumental music is a fine art or "accomplishment," rather than a mechanical art. We do not place it among our "industrials" in the same sense, or for the same purpose, that we do those provided for teaching the trades. Accordingly, a fee of $12 per term, or seventy-five cents per week is required from female students for tuition and the use of pianos or organs.

The only charge made for material in either the literary or industrial departments is for the chemicals used by students in laboratory practice, which are furnished at wholesale prices, and amount to but a small sum.

Furnishing an absolutely free education is as much as can be reasonably asked; and the Institution neither boards, clothes, nor supplies the student with text-books. Boarding can be obtained in private families at from $2.75 to $4 per week. Washing costs from seventy-five cents to one dollar per dozen. Text-books, which can be procured in Manhattan, cost from $2 to $5 per term.

No student need expend over $5 per week; and many of our best pupils are living at $1.25 per week. Students desiring to "board themselves" can do so at from $1 to $2 per week. In a club of four young men, renting a house, the average cost to each for the term was $1.11 per week.

LABOR.

Manual labor by the students may be for either of two purposes: First, to acquire skill in a given art; second, to earn money. In the first case, the labor is educational; in the second, it should be paid for by the party benefited.

Educational Labor.—Manual labor in the recitations of the Industrial Departments, like mental labor in those of the Literary Departments, is purely educational and will not be remunerated. While the interest of the student will be held paramount in the direction of this labor, the practice necessary to dexterity will be required.

Remunerated Labor.—When the Institution needs labor on the Farm or elsewhere which is not educational, but simply for its own profit, and which a student is able and willing to perform, it becomes an employer instead of a teacher, and he an employe instead of a scholar. It pays for work, he works for pay. The relation between them is commercial, not educational; and both parties must act upon business principles. Hence, the College furnishes only such employment as its own interests require, and will pay according to the value of the service rendered at from seven to ten cents an hour.

AMOUNT EARNED.

It is impossible to predict how much a given person can earn, since that depends upon what he can do and what work there is to be done. Hence, it is wholly impossible for us to answer the question so often asked: "Do you think I can meet my expenses by work?" Some students make one-half their expenses, some the whole, and exceptional men have made more than expenses. As a rule, a faithful boy skilled in farm work can earn half his expenses on the Farm or in the Nursery. During the year he can ordinarily acquire sufficient skill in the wood or iron shops to enable him to make articles for sale. The whole question is one for his own consideration and decision. We can teach all who come, but cannot absolutely *promise* anything more. Hitherto we have refrained from holding out strong inducements respecting the amount of labor we might have to offer; but in view of the fact that during each of the last three years we have had more to do than the students could perform, we are inclined to give greater and positive encouragement on this point. Any boy who is in dead earnest, who is familiar with farm operations, and who can raise $50 to start with, should be able to carry himself through the four years' course. And certainly this places an education within the reach of every determined boy. As yet we are unable to offer similar advantages to girls, not requiring labor in the College departments which they can perform.

RULES.

1. Behave as a true man or woman should, at all times and in all places.
2. Attend to your own business promptly, thoroughly and courteously; and vigorously let alone that of other people.
3. Penalty: "Leave!"

PUBLICATIONS.

The "Hand-Book," published in 1874, containing a full discussion of the educational question and the aims of the Institution, will be forwarded to any one desiring it.

THE INDUSTRIALIST, a weekly journal edited by the Faculty and published by the Printing Department, contains original and seasonable articles on the Farm, Orchard, Trades, Sciences, and Education. Price, 75 cents a year. Address A. A. Stewart, Manhattan.

CALENDAR.

Winter Term 1879.—Began Friday, January 3d, 1879.

TO NEW STUDENTS.

Bring the text-books you have been using. On arrival, first arrange for your boarding. A. A. Stewart, Sup't Printing Department, will furnish information, either by letter or on application, concerning boarding places or rooms for rent. Report to the President at 8:30 A. M., immediately after chapel, for enrollment.

For further information apply to Jno. A. Anderson, President, Manhattan, Kansas.

LITERARY SOCIETIES.

ALPHA BETA.—Chartered, December 26th, 1870. Meets in College building every Friday at 2 P. M. Ladies admitted. New students cordially invited to attend. W. H. SIKES, President.
MISS MARIA E. SICKELS, Secretary.

WEBSTER.—Chartered, January, 1871. Meets in Telegraph Hall every Saturday evening. Visitors, especially students, always welcome.
H. C. RUSHMORE, President.
J. N. MORROW, Secretary.

RAILROAD TIME-TABLE.

KANSAS PACIFIC RAILWAY.

PASSENGER ARRIVES.

No. 2, going East	11:14 A. M.
No. 4, going East	3:47 A. M.
No. 1, going West	5:10 P. M.
No. 3, going West	4:33 A. M.
No. 7 (freight), going West	8:15 A. M.

Nos. 1 and 2 run daily; Nos. 3 and 7 run daily except Monday; No. 4 runs daily except Sunday. Passengers with tickets are carried on No. 7.

GEO. C. WILDER, Agent.

THE INDUSTRIALIST.

SATURDAY, MARCH 22, 1879.

INDUSTRIAL EDUCATION.

The real value of an education to the student depends upon two things: First, the practical worth of the knowledge taught; and, second, the degree in which he makes it his own. Hence, the ability of any institution to give a practical education depends upon the kind and aim of the knowledge it teaches, and upon the thoroughness of the instruction therein. The State Agricultural College was directly endowed by Congress, and is guided by the State, for the specific purpose of furnishing to the industrial classes of Kansas a "practical" education, that is, "one fit for use." As its name indicates, and as the statistics of the industries of the State require, its chief work must be that of giving a useful and usable education to those who will engage in farming; and, therefore, the Farmer's Course must, from the nature of the case, be its main one.

FARMER'S EDUCATION.

Words and figures are merely instruments with which to record ideas. They are not themselves ideas, nor should they be made the chief end of an education. As a wagon is necessary to haul grain, so are they a necessary part of an education; but as the wagon is not the grain, so they are not the knowledge which the farmer converts into money. Hence, the classics and higher mathematics are not taught. But it will be noticed in the following course that so soon as the pupil acquires working skill in the use of the English language as a tool, and of figures and lines as mathematical tools, those arts and sciences which present knowledge that has a cash value to the farmer are taught as rapidly as their importance and thorough acquisition will permit. Studies numbered (1) and (4) in the second, third and fourth years are the spine of the course, to which the others are as ribs and muscle.

FARMER'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Practical Agriculture (advanced.)		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit'l Economy, Practical Law.		3. Practical Geometry.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. Practical Agricul. (elementary).		4. English Structure.	
5. Agricul. Chemistry	Meteorology.	5. Organic, Analytical Chemistry.		5. Physics.		5. Adv'd Arithmetic, Book-keeping.	
6. Logic.		6. Practical Surveying.		6. Industrial Drawing.		6. U.S. History, Industrial Drawing.	

WOMAN'S EDUCATION.

Nearly one-half of our students are females, and the Woman's Course is prepared expressly for their liberal and practical education. We have no doubt whatever that practical men and women, who understand what it means and what it seeks to do, will fully endorse it.

WOMAN'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Farm Economy, Special Hygiene.		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit'l Economy, Practical Law.		3. Industrial Drawing.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Horticul., Landscape Gardening.		4. English Literature.		4. English Structure.	
5. Phys'c'l Geography, Meteorology.		5. Organic, Household Chemistry.		5. Physics.		5. Adv'd Arith., Book-keeping.	
6. Logic.		6. Household Economy.		6. Industrial Drawing.		6. U.S. History, Industrial Drawing.	

MECHANIC'S EDUCATION.

Because of the adaptedness of the leading course to the wants of the intelligent mechanic, it has been found practically unnecessary to diverge from the Farmer's Course. Additional studies, specially adapted to the mechanic's use, will be furnished in a Post-Graduate's Course.

If it be urged that the distinctively agricultural knowledge taught in the Farmer's Course is not directly valuable to the mechanic, we reply that, admitting the point for the purpose of argument, yet: 1. This knowledge is of more practical value to the mechanic than is the Latin, Greek, or a half dozen other things embraced in the usual course preparatory to the professions; 2. That the great majority of Kansas mechanics will also be more or less engaged in agriculture; 3. That those studies in the course which are directly valuable to the mechanic, together with the shop facilities, offer a better mechanic's education than can be elsewhere found west of the Alleghanies.

INDUSTRIAL DEPARTMENTS.

Having knowledge in the head is one thing; ability to use it with the tongue, fingers or feet is quite another thing. Both are vital to success in practical life. A man might thoroughly understand the theoretical principles of carpentry, and yet, not having used the tools, be wholly unable to earn carpenter's wages. So in all other vocations. Accordingly, instruction is given in the following well-equipped Industrial Departments, and every student is required to recite in some one of them, as selected by the pupil or parent:

FOR MALE STUDENTS.	FOR FEMALE STUDENTS.
The Farm.	Dress-making.
The Nursery.	Printing.
Carpentry.	Telegraphy.
Cabinet-making.	Scroll-sawing.
Turning.	Carving.
Wagon-making.	Engraving.
Painting.	Photography.
Blacksmithing.	Instrumental Music.

Each of these departments is conducted exactly as in daily life, and aims to give precisely the drill received by an apprentice. No charge is made, either for tuition or material, from male students taking the Industrials provided for them; nor from female students taking the ones provided for them, except in the Department of Instrumental Music. Male students taking either Printing or Telegraphy are charged $1 per month for the use of material and instruments.

DEPARTMENTS OF INSTRUCTION.

DEPARTMENT OF AGRICULTURE.

PRACTICAL AGRICULTURE.

Second Year:—General principles of breeding; history and characteristics of breeds; adaptation of different breeds for special purposes and localities; implements of simple tillage; mechanical principles involved in their construction; action of the plow upon soil and subsoil; principles of draught; influence of different adjustments upon draught; use of the dynamometer; value of hoed crops in a system of husbandry; the cultivation of corn and roots; soils that need drainage; how to lay out a system of drains; house drainage; sewerage.

Fourth Year: General view of agriculture, ancient and modern; agricultural progress of the last century; relative advantages of mixed husbandry and special farming; the selection and arrangement of the farm with reference to the system to be pursued; rotation of crops; general advantages of a rotation; the best rotation with reference to disposition of labor, production of manure, and extermination of weeds; pasturage and production of grain and forage crops; manures, how best housed and applied; composting manures; commercial fertilizers; systems of feeding; stall feeding; steaming food; soiling; experiments in feeding; farm buildings; farmhouses; barns.

FARM ECONOMY.

Woman's Course, Fourth Year: Dairy products as human food; influences affecting character of milk; manufacture of condensed milk; the factory system and household plan of cheese-making; treatment of rennet; general process of cheese manufacture; subsequent treatment of cheese; butter-making; creameries; "deep" and "shallow" setting systems; general process of butter-making; packing and preserving butter.

DEPARTMENT OF BOTANY AND PRACTICAL HORTICULTURE.

This department embraces a course of instruction in the elements of botany, structural and systematic, with a constant attention to the practical application of botany to the farm, orchard, garden, nursery and forest; also a course of lectures on Landscape Gardening. The instruction is mainly given by lectures, accompanied by regular practical drill in all the work of the fruit, vegetable and flower gardens, nursery, orchard, vineyard and ornamental grounds.

The lectures in Practical Horticulture embrace the following and kindred subjects: The relation of atmospheric motion, moisture and temperature to horticulture; seeds, the means of collecting and preserving; propagation, by seeds, cuttings, layers, suckers, grafting, budding; care of young plants; improvement of varieties; management of commercial and farm nursery; modes of pruning; the orchard; fruit suitable for orchard and garden culture; the flower, vegetable and fruit garden; importance and mode of forest culture; shelter belts and their influence; weeds and useful plants; noting the species of trees worthy of culture, either for profit or ornament.

LANDSCAPE GARDENING.

The lectures on Landscape Gardening not only unfold the accepted principles of the art, but at the same time give special attention to such applications of the art as may be made universally available in laying out and improvement of farms and the homes of the people. These lectures are accompanied by a practical drill in in the work of laying out and plotting grounds topographically.

CHEMICAL DEPARTMENT.

PHYSICS.

This includes a full consideration of the laws of mechanics, of liquids, gases and vapors, weights and measures, and specific gravity, followed by experimental study in the Physical Laboratory of the laws of heat, light, with spectrum analysis, electricity and magnetism, and the relation of these forces to plant and animal life. Text-book, Ganot.

INORGANIC CHEMISTRY.

This course is opened with a careful study of chemical forces and the laws governing chemical combination. The elements, with their compounds, are next considered in succession as to their history, properties, manufacture, and especially with regard to their uses on the farm and in the arts. These lectures are accompanied by an extended course of laboratory practice in which each student performs every experiment with his own hands. Text-book, Eliot & Storer.

ORGANIC CHEMISTRY.

This comprises a thorough study of the chemistry of the organic compounds, the composition of plants and of the various compounds derived from them. Constantly accompanied by laboratory practice.

CHEMICAL ANALYSIS.

In this course each student is furnished his stand in the Qualitative Laboratory, completely furnished with apparatus and chemicals for his own use. He here performs analyses of farm soils, plant ash, commercial manures, ores, mineral waters, commercial compounds, etc. After completing this course, he enters, if he desires, the Quantitative Laboratory, where he pursues a full course in quantitative analysis. Text-book, Kedzie's Manual.

AGRICULTURAL CHEMISTRY.

This includes a thorough consideration of the application of chemical principles to the economy of the farm; the origin and formation of soils; the classification and composition of soils; the analysis of soils and their adaptation to purposes of production; the composition and use of manures; composting; chemistry of farm operations, such as plowing, fallowing, draining, etc. Text-book, Johnson's "How Crops Feed."

METEOROLOGY.

Embracing the composition of the atmosphere; atmospheric pressure; temperature and humidity; laws of storms; rain, snow and atmospheric electricity. A full course in meteorological observations is taken under direction of the Signal Service. Text-book, Loomis' Meteorology.

MINERALOGY.

This includes the study of the laws of crystallography, with the properties, forms and uses of the principal minerals of the United States. Blowpipe analysis forms a very important part of the course, each student being required to name and identify a large series of minerals. Text-book, Dana's Mineralogy.

HOUSEHOLD CHEMISTRY.

A course of lectures on this subject is yearly delivered to a class of young ladies. The course embraces the chemistry of cooking; the composition of food; bread; tea, chocolate and coffee; butter and milk; ripening and preservation of fruits, etc.

SPECIAL COURSES

Are constantly in progress in Assaying, Pharmaceutical Chemistry and Photography.

ENGLISH LANGUAGE.

Words are simply tools used to express ideas; and, since the vast majority of our communications are made by the employment of spoken or written words, skill in using them is as profitable to the industrialist as dexterity with the needle is profitable to the seamstress. The direct aim of the course is to make the student skillful and intelligent in handling the machinery called language, just as an engineer handles a locomotive; and no drill will be omitted, or effort spared, to gain this end. Apart from the course itself, which is far more practical and complete than that usually found in literary colleges, the constant attention given this subject by all the departments, and especially the practice required in the printing classes, affords superior advantages to the student.

DRILL IN ENGLISH.

"As grammar was made after language, so ought it to be taught after language."—*Herbert Spencer.*

Drill in English embraces the following topics:

Sounds of the language; drill in producing the vocal, sub-vocal and aspirate elements with accuracy, distinctness and volume; vowels, consonants.

Letters: Form; power; rules for spelling, drill.

Words: Signification, properties, modifications, variations, relation and dependence.

Sentences: Drill in statement of ideas; description, clearness, terseness, vigor; business letters, discussion; capitalization; syllabication; punctuation; construction and analysis of sentences; elements, uses and names; criticism of compositions printed as written; proof reading; grammatical construction; superfluous words and clauses; drill in reading, speaking and penmanship.

Text-books: Webster's Academic Dictionary; Lee & Hadley's Advanced Lessons in Language.

Pupils deficient in spelling, etc., should enter the printing class, the printing-office being the work-shop of language.

STRUCTURE OF ENGLISH.

ELEMENTS OF WORDS.—The end aimed at in this study is to learn everything about words which will aid in their effective use. Among the topics included are:

Roots: What are they; their origin; their force and value as an element of language; the manner of their growth into different parts of speech.

Stems: Their derivation; their offices and properties; their relation to other parts of words.

Prefixes and Suffixes: The several sources whence derived; the relation of their force or significance to those sources; explanation of the laws and principles governing their use along with stems.

Compounds: Their value; their properties and uses; the laws governing their formation.

Synonyms: Definitions; causes of their abundance in English; the principles to be observed in choosing among them, to express a thought.

Criticism: This constitutes a prominent part of the exercises of the pupil through his whole course in the study of English. It not only diversifies and enlivens the class-room exercise, but reduces to practice the principles of the structure of the language. By this means, the student acquires not only a knowledge of English, but readiness and accuracy in speaking or writing it. The exercises in criticism embrace not only examination of selected matter, but original composition.

ELEMENTS OF SENTENCES.—The purpose in view in studying this subject is not to traverse the ground gone over in the study of grammar, but to fix in the mind of the student a clear understanding and remembrance of names, the properties and offices of the several classes of words entering into an English sentence, by showing him the reason of things; to make more simple, as well as interesting and practically useful, a study otherwise "dry and unprofitable" in many cases, by explaining the reason of the verbal forms and changes, the rules and maxims he is to remember and observe in his use of language. In the same manner he is conducted through a study of the mutual relations and dependencies of the several elements making up a sentence.

MATHEMATICAL DEPARTMENT.

Figures and lines, like words, are only instruments with which to convey ideas, or perform operations that cannot be easily done without them. The arithmetical principles used in business are few and simple; but accuracy and rapidity in computation are only gained by practice. College graduates often fail to retain clerkships, not because they do not know *why* given operations are performed, but because they can neither add, multiply or divide with that habitual correctness which renders their work reliable.

DRILL IN ARITHMETIC.

The chief design of this study is to make the student expert in the use of numbers, as employed by the industrialist for profit. The occupation of a successful farmer demands the application of every principle of practical arithmetic, and is taken as a starting point, rather than that of an abstract system. Beginning with a simple cash account, book-keeping is gradually developed to the full extent of its real utility. The areas of fields, expense of crops, construction of houses, sales of produce, and investment of capital, involve all the fundamental operations, and those of profit and loss, commission, taxes, insurance, exchange and stocks. Following this line, the student, so far from hammering away at "pure" science draws from the mathematical store-house what he needs, and sees why he needs it. Accuracy of calculation and posting, rather than a *mere* comprehension of the principles, is aimed at. Besides the recitation-room drill in business forms, practice in the field is also given. Estimating the number of cords in a pile of wood said to be 100x4x4 feet is one thing; measuring a pile of wood through which any number of cats may be harmlessly thrown, and in which four-feet sticks are the exception, is quite another and more difficult thing.

ARITHMETIC AND BOOK-KEEPING

Is a continuation of the above, having the same purpose and adopting such methods as the necessities of the class indicate. Thorough instruction in the principles and forms of business law is given. It will be seen that this method of teaching book-keeping, besides ensuring arithmetical practice, develops practical skill in that important art.

ALGEBRA.

Algebra is included in the course as a preparation for the study of Surveying.

DRAWING.

The practical value of Industrial Drawing can hardly be overestimated, first, because its study is the best drill for the development of the perceptive faculties, which are the ones most employed in daily life; and, second, because the working classes make a far greater use of lines than they do of figures. A farmer follows a line when laying a straight furrow; the carpenter uses the square and rule twenty times as often as he does figures; and a woman in cutting a pattern, or deciding that one bonnet is prettier than another, does so by the line or "form." So that either in its direct application, or in the exercise of that taste which comes from skill in using lines, this branch of mathematics is quite as important as a means of "mental discipline" as is the branch of computation, and is of far greater daily use. The admiral system of Prof. Walter Smith, Art Director of Massachusetts, is thoroughly followed through the grades of Free-hand, Geometrical, Object, Model, Perspective, Mechanical and Topographical Drawing, during the terms indicated by the Course of Study. In addition, constant practice in the application of lines to metal and wood is furnished in the Blacksmith, Carpenter, Turning, Scroll-sawing, Carving, Engraving and Printing shops, and to fabrics in the Sewing Department.

PRACTICAL GEOMETRY.

Not one farmer in a thousand ever uses the transit in surveying his land, the testimony of the county surveyor being decisive in court; but every farmer makes countless applications of lines and angles in laying off fields, roads, gardens, planning houses, determining levels, etc. The object of Practical Geometry is to teach the properties and uses of angles, and to make the student skillful in the application of lines to the field by the use of such simple instruments as are always within reach, or within his ability to construct; and accurate in the transferring of plans to the grounds, board or block.

PRACTICAL SURVEYING.

The drill in the use of figures and lines given by the mathematical course as above indicated, renders the mastery of surveying an easy task. There is no calculation made or formula used by the working engineer which cannot be readily understood and performed by a skillful arithmetician after proper instruction. The hand-book of the engineer is accordingly supplemented with such special guidance as is found necessary for a full comprehension of the mathematical principles and their applications; and extended field practice is required in the use of the compass, level, transit and theodlite.

STUDIES SPECIAL TO WOMAN.

Besides the studies already indicated, attention is called to the following:

SPECIAL HYGIENE.

As shown in the course, one term is devoted to the study of Physiology, from the text-book of Dr. J. C. Dalton. This is followed in the fourth year by a course of lectures to young ladies by Mrs. Cripps on the subject of Hygiene, embracing such instruction in hygienic matters as are valuable to woman.

FARM ECONOMY considers those affairs of the farm which usually come under the supervision of the farmer's wife or daughter, and which are not included in "gardening" or "household economy;" such as butter and cheese-making, dairy management, etc. A course of lectures is delivered by the Professor of Practical Agriculture. See heading, "Farm Economy."

GARDENING is included in Practical Horticulture. See heading, "Landscape Gardening."

HOUSEHOLD CHEMISTRY. See heading, "Household Chemistry."

HOUSEHOLD ECONOMY

Follows Household Chemistry and consists of lectures by Mrs. Cripps on the art of house-keeping, embracing cookery, domestic management, and kindred topics. Many elderly gentlemen sufficiently know, and more young gentlemen will duly discover, that systematic knowledge of how cooking ought to be done is luminously different from the ability to do it. Instruction without practice can effect but little. Accordingly, a kitchen laboratory has been completely furnished, and affords every facility for drill in the art of cooking. This drill chiefly differs from that of a kitchen in the respect that after a girl has learned to wash dishes or pare potatoes she is not kept everlastingly at either. After full trial, we have found it just as feasible to give this practice, with profit and pleasure to the pupil, as it is to give laboratory practice in chemistry,—and no more expensive.

Mathematics.—Practical, direct and thorough drill in Arithmetic, Book-Keeping, Industrial Drawing, Algebra, Geometry, Trigonometry, Surveying, Mechanics and Engineering. Work in Field, with Tape Line, Chain, Compasses, Transit and Level. The course is shaped for the benefit of the farmer, mechanic, or business man rather than for the benefit of the astronomer.

Special for Woman.—Special lectures on Farm Economy, by Prof. Shelton, discussing the Dairy, Poultry, etc. Gardening, by Prof. Van Deman, treating of the vegetable, flower, commercial and ornamental. Household Chemistry, by Prof. Failyer, consisting of the chemistry of cooking, bread, tea and coffee, butter, cheese, dyeing and coloring, bleaching, disinfectants, ventilation, etc. Special Hygiene, by Mrs. Cripps.

THE INDUSTRIALIST

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THE INDUSTRIALIST.

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Why Stock Farming is better than Grain Farming.

The advocates of stock breeding and feeding as being more desirable farming than making grain growing a speciality, need not be without a reason for the faith that is within them. It is not a mere blind assertion that the former will pay better than the latter, in a series of years. It has not simply "happened" that this has been true in the past. It can be shown that the principles of good business management strongly favor the plan of making live stock a prominent feature on the mass of farms of the country — certainly in the West. There are many farms of which this is not true, but they are in the minority, not the majority.

It is an obvious principle, that if we have to transport our products, especially long distances, it is wise to reduce the weight and bulk as much as possible. This the farmer does in a marked degree where he feeds his grain and grass to animals instead of selling these produets. The condensation is most marked where the product of the animal, as wool or milk or, better, its products, butter and cheese, are sold; but the homely proverb, that the best sack in which to ship corn to market is a beef-hide or hog-skin. expresses a truth forcibly, if not elegantly.

The one great disadvantage of western agriculture as compared with that of the East, is the greater distance from the great markets for farm products. Complaints of too high charges for transportation have been common. A difference of even a small fraction of a cent in the freight charges per pound, for shipping corn, may decide whether the crop is to give a profit or loss, for its value at starting is now less than half a cent per pound. A like difference would be less important in the case of pork, beef or mutton; still less in the case of cheese, butter or wool. Here is one indisputable advantage the stock farmer has. It is a generally recognized rule, that the selling price of any article is largely affected by the time, labor, and skill required to produce or reproduce it. It is also usually true that the more frequently we change the form of the product, the more we "manufacture," the greater is the probable profit. In these regards the stock farmer has an advantage over the one who stops at grain growing. Animals require a longer time for their production, and usually more care and skill than does grain growing.

It is one of the most obvious of business principles that one should keep his capital constantly employed. It is better to loan money to the Government at four per cent for a long series of years, than to loan for three months of each year at 10 per cent, and then have the money lie idle the remainder of the time. It is better to take steady work at $1 a day than to rely on uncertain "jobs" at $2 a day. It is a special advantage of stock growing and feeding that, if rightly managed, each animal may increase in size, weight and value each day, and each day labor for itself, or require the labor of its owner in some form. Payment for this labor is to be expected, and some profit also. It is a special disadvantage of exclusive grain growing that, especially with spring-sown small grains, all the work may be done in less than half the year; then the crop ceases to improve or change in actual value, except to lose by waste of various kinds. During perhaps half the year, the farmer giving all his attention to grain growing is comparatively idle, as is his team, while the stock grower may find employment during the entire year. The fact that daily labor throughout all the year is an essential in dairy farming, is one chief reason for the more than usual profitableness of that interest through a series of years.

It is wise not only to keep capital constantly employed, but also to keep *all* the capital employed whenever this is possible. Stock farming here, again, has the preference over grain farming. Very many farms are too wet, too hilly, too stony, or, as yet, too stumpy for profitable tillage, but will give a fair return when in grass. There are nooks and corners, there are the sides of streams and fences, which produce good grass, but are not used when the land is in grain. So, too, the stock will profitably consume many products which would be largely wasted on grain farms. The waste of valuable food, where no stock is kept on a corn-growing farm, is very great. Even the straw from the small grains can be put to better use than simply to allow it to rot for manure.

The use of the word manure readily suggests one other marked advantage in rearing and feeding stock over the plan of grain or grass growing for sale. Much less is removed from the farm, and much more remains to be returned to the land as manure. The hay-seller disposes of nearly all the land has produced, except the roots; the grain-seller saves the stalks; the stock-seller saves much of the grain; the wool or milk-seller saves much more, as a rule, although in some respects pasturage of dairy cows is more exhaustive to land than is feeding steers.—*National Live Stock Journal.*

Agriculture and National Prosperity.

Dr. Curry has the following words of wisdom in the *National Repository* for March:

In matters of finance and of economical administration, experience is the only safe teacher, which is not only a very dear school-master, but also one rather difficult to be understood at many important points. Looking backward from our present position over the last twenty years, it is not difficult to trace the causes that have led the country along to the present state of its affairs. The war of the rebellion, which extended virtually over the first half of the last decade, was at once the most thoroughly engrossing, for the same country supplied and supported both sides; and it was conducted everywhere with marked financial recklessness, and it resulted necessarily in a vast actual impoverishment. While it continued it quickened every department of industry to an unprecedented activity, and, with the help of a depreciated currency, induced a scale of prices and of expensiveness of living quite beyond wholesome possibilities. The ending of the war turned loose upon society nearly half a million of producers, to be added at once to the industrial force of the country, and to its consumers. And, in the return of these citizen soldiers to private life, they carried with them not much less than a hundred millions of dollars, nearly all of which was rapidly thrown into the retail trade of the country.

The three forces, a depreciated currency, a vast increase of productive labor, and abundance of ready money in the hands of the common people, all acting in the same direction, produced the most intense financial activity, with rapidly increasing prices. But all this was abnormal and unhealthy, and, of course, could not be permanent: probably in no other age or country could it have continued so long, nor could there be elsewhere so much hope for a speedy and complete recovery from so great a disaster as is now opening in this country.

It now remains for those who see a new era dawning upon the land, while accepting with cheerfulness the new order of affairs, to gather instruction from the past, and to adjust their future actions to the demands of the case. It is evident that certain strongly-marked social and industrial tendencies of the past have gone forward to unwholesome and unprofitable extents. The relative decrease of population in the rural districts of the older States, and the inverse increase of the cities give an undesirable outlook for both the moral and financial future of the country. The world's history bears a strong testimony in favor of the position that permanent national prosperity is impossible except where agriculture is the chief form of national industry. The stability of the French nation, as a nation, during a hundred years of revolutions fomented in the cities, is due to the fact that the great body of the people are agriculturists, living *on* and *off* their several small estates. The decadence of England's glory, both financial and social, if indeed that decadence is in the near future, as many wise men predict that it is, is due to the fact that instead of being, as for so many generations it was, a land of home-livers and bread-producers, it has become a nation of traders and artisans, crowded into towns and cities, where both the individual and the family are swallowed up in the swirling flood of operatives, with its superincumbent body of capitalists and operators. The manifest tendency of our people in the same direction, especially in the older States, is among the evil prognostics of the times, and the checking of that tendency is among the incidental good things that may be hoped for from the present experiences. The first and greatest want of this country is a large relative increase of its rural population — persons and families living upon their farms, and working them chiefly with their own hands, and deriving their chief sustenance from their own fields. —*Country Gentleman.*

The Facts in the Case.

The following extract contains so many valuable suggestions in so few words, that we publish it and send it on its mission for good:

"The land of a country is a fixture, and the owners of the land must of necessity become fixtures. They, more than any other class, are interested in the preservation of law, order, religion and all the social blessings. War and disruptions of society affect them more than any other classes, because they are unable to carry their estates with them. Whether they are or not, the farmers have greater inducements to be patriotic and conservative. Commerce shifts like the breezes that fill her sails; agriculture stands like the solid earth that makes her home.

It is almost incredible how long the farming interests of the country, that make the glory and greatness of the land, that constitute the stay of national strength and prosperity, have been held in subordination to those interests which are as much dependent upon them as a suckling babe is upon its mother. Let the laws enacted by our Legislatures and Congress be read, and it will be found that every pursuit in the country has received more attention, encouragement and protection than the one upon which the splendor and permanency of the Government rests."—*Grange Bulletin.*

THE cheapest kinds of food are sometimes the most wholesome and strengthening; but, in order to obtain all their best qualities, we must know how to choose them for their freshness, goodness and suitability to our needs. That done, we must see how to cook them, so as to make savory and nutritious meals, instead of tasteless or sodden messes, the eating whereof sends the man to the liquor shop to consolation.

THOROUGH culture is worth three mortgages on a farm.

THE INDUSTRIALIST.

SATURDAY, MARCH 29, 1879.

E. M. SHELTON, Managing Editor.

ASSOCIATE EDITORS, MEMBERS OF THE FACULTY.

Experiments on the College Farm. No. II.

EXPERIMENTS IN SUCKERING CORN.—The object of this experiment was to ascertain the effects of removing the lateral shoots, or "suckers," from growing corn. To this end, eight strips or belts were laid off through the center of that part of field A devoted to corn the past season. Each belt occupied one-twentieth of an acre, and every alternate strip had its suckers carefully removed on June 10th and July 2d, the plants in the remaining strips being allowed to grow according to their natural inclinations. The result of this experiment is shown by table No. 1.

TABLE NO. 1.

Plats.	*Yield of plats in lbs.*	*Yield per acre in bushels of 70 lbs., ears.*
Plat A—natural	181	51.7
Plat B—suckered	169	48.2
Plat C—natural	170	48.5
Plat D—suckered	160	45.7
Plat E—natural	159	45.4
Plat F—suckered	154	44.0
Plat G—natural	182	52.0
Plat H—suckered	159	45.5

In table No. 2, the yields of the suckered and natural belts are grouped for comparison.

TABLE NO. 2.

	Aver. yield of plats, lbs.	*Aver. yield per acre in bushels of 70 lbs.*
Natural	173	49 4-10
Suckered	160½	45 9-10
Increased yield of natural plats...	12½	3 5-10

The ground upon which this experiment was conducted was selected because of the uniformity of its soil. The results seem to show, however, that the soil became progressively poorer from plat A to plat H.

The results obtained in these experiments will be a surprise to many. The practice of "suckering corn" is by no means obsolete, and there is a larger class of farmers who believe the practice a good one, and are only prevented from following it by the large amount of hand labor involved. A glance at these tables shows that the removal of the suckers was a positive injury to the crop, and that, not in occasional cases, but uniformly through the series, there being only one exception to the rule of the experiment, the "natural" plats yielded larger crops than the suckered plats adjoining. It should be remembered that the suckers themselves rarely bore ears, and when productive the corn was so small and inferior that the result was scarcely affected by it. Without doubt, the suckers contributed to the general vigor of the plant, either by absorbing from the atmosphere, or by inducing increased growth in correlated parts, especially the roots.

It would seem from this experiment that the practice of removing the suckers from corn is not well founded.

LARGE DENT AND SMALL CORN.—We have grown both of these sorts of corn in the past year, and in the following proportions: Yellow Dent, 16½ acres; King Philip, 6¼ acres. The Dent yielded 42 6-10 bushels per acre, costing 12¾ cents per bushel. The yield of the King Philip, upon poorer soil, was 50 bushels, costing 13 cents. The only difference in the treatment of the two sorts was, that the King Philip was drilled, the drills being 3 feet 9 inches apart; while the Dent was planted in hills 3 feet 9 inches each way. The King Philip was quite ripe by August 10th; the Dent requiring fully one and one-half months longer. These facts seem to me to emphasize what I have urged in previous reports, namely, that our farmers should plant more largely of the smaller sorts of corn; and not alone because they mature early, and thus enjoy almost entire immunity from drouth and grasshoppers, but animals, without exception, greatly prefer this small corn to the large.—*E. M. S.*

The Condition of the Wheat.

Many apprehensions are expressed as to the present condition of the winter wheat, and we often hear the fear expressed that the protracted dry weather has materially injured the growing crop. We are of the opinion that these fears are quite groundless. Certainly the wheat upon the College farm has passed through the winter in excellent condition, and should the spring prove a favorable one we shall look for a heavy harvest again in 1879. Much, however, depends upon the spring,—almost everything, in fact. Should April prove a month of warm, dry weather, then each plant will send up but a scanty number of seed-stalks, and a thin crop will be the result. If, on the other hand, the spring proves a moist, cool and rather "backward" season, then the wheat-plants will "tiller," and thus thoroughly occupy the land and lay the foundation for a heavy crop.

WHEAT AFTER OATS.

The plan of seeding wheat after oats and allowing the scattered oats to grow up with the wheat has been often advocated and as often condemned. The argument in favor of this practice, briefly stated, is that the oats, having been killed off by the early winter frosts, act as a mulch in protecting the young wheat-plants during the winter. On the other hand, it is argued, with great apparent force, that the oats smother the young wheat and rob the soil of the moisture and nutriment just when the wheat needs these most. We have often seen wheat started with oats in this way in the East, and have never seen other than bad results from the practice. Last fall a part of one of the wheat-fields upon the College farm, from which a crop of oats had been taken, was seeded to wheat and the oats allowed to grow, according to the orthodox plan. From the present appearance of the field, not more than half a crop will be grown upon that part seeded with the oats, as compared with the remainder of the field, which received clean cultivation.—*E. M. S.*

Grafting. No. II.

Stock grafting is grafting upon trees as they stand in their natural places in the orchard or nursery. There it often becomes necessary to graft large trees. The mode called cleft grafting is generally the simplest and the most satisfactory. Although very large branches, sometimes three inches in diameter, may be successfully grafted, yet it is best to work those not larger than one to one and a half inches. By cleft grafting is meant to saw off or cut with a knife such branches as are to be grafted, and split them so as to receive the scion in the opening. See Figure 2. The scion should be about two or three inches long. It should be trimmed on two opposite sides in such a manner as to make a long wedge. One edge of this wedge should be a little thicker than the other. It should be placed in the split or cleft of the stock, with its thick edge outward, that it may be held tightly by its other edge, or that part next the bark. Great care should be used that the inside surfaces of the bark of the stock and scion should coincide. This is the place where the living union is first made. A stock over one inch in diameter should have two scions—one on each side of the cleft. Unless the stock is very small, the elasticity of the wood will hold the scions in place. If the stock is almost as small as the scion, the same method (whip grafting) should be used as in root grafting.

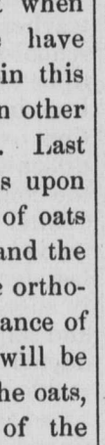

Figure 2.

If the tree to be grafted is only an inch in diameter, the whole top may be cut off and grafted at such a place as the tree is desired to be made to branch. One and a half or two feet would be a convenient height. If larger, so that its main branches are an inch or two in diameter, graft in several places on these main branches. If the tree is of a large, bearing age, still more judgment must be used in the selection for grafting of such branches as are best. In any case of top grafting, where a tree already formed is to be changed, the strongest, leading branches should be grafted the first year. It is very rarely wise to cut off more than one-half the branches in any one year. If the leaders are grafted the first year, the new top will be somewhat formed by the next year, when the remainder can be either cut away entirely or grafted. If all the top is cut away the first year, the tree if large is apt to be too severely mutilated, and will probably become diseased.

About four to six inches from the crotch, or junction of the branch with the tree, is the place to cut. Great care should be used, in cutting the branch, not to peel the bark, or in any way crack or mar the stump to be grafted. If the branch leans, so that there is danger of splitting in sawing off, that trouble can be prevented by first sawing a little into the under side and then from above.

In any case where grafting is to be done in the open air, above ground, the wound should be securely covered with grafting wax. This is made by melting together one pound of resin, a little more than half a pound of beeswax, and a little less than half a pound of tallow or linseed oil. When these ingredients are thoroughly melted and mixed, pour gradually into a large bucket or tub of water. It may be thus cooled and collected in a ball. Work the mass with the hands, using a very little grease to keep from sticking, until the water is all worked out, and the wax is ready for use. Every part of the wound should be most securely covered, but the wax should not be daubed on thickly, for a thin covering is as good as a thick one.

Side grafting is a style which is seldom used. A gash is made in a large branch, or in the main body, of a small tree; and a scion, wedged as for cleft grafting, is forced into the side of the cut in such a manner as to bring the inner edges of the bark, or more properly the cambium layers, in contact. This is waxed over and bound with a strip of rag or woolen cord, to hold the parts firmly together, if they are not so without it. By this mode a branch may be made to grow in the side of any part of the body or branches. If but to test the character of some unknown variety, it does not destroy the tree or change it materially in case the newly-introduced kind is not worthy. See Figure 3.

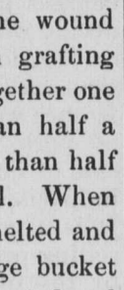

Fig. 3.

Saddle grafting is another variation of the same principle. The stock or branch must be small and wedged upwards from both sides. The scion is notched in a saddle-like manner, or simply split at the butt-end, so as to fit the sharpened stock.

There are also several variations of side grafting, by some called bud grafting. They must be performed after vigorous action has begun in the stock, when the bark runs or peels easily, because of the presence of the tender, mucilaginous cambium layer between the bark and wood. The bark is cut crosswise, and a slit made lengthwise the same as in budding. The scion is sloped on one side and gently forced downwards under the bark until the flat, cut surface of the scion lies next the wood of the tree. See Figure 4. The wound is covered with grafting wax, or bound with strips of old cotton rags saturated with wax when melted.

Fig. 4.

Spur grafting is done for the purpose of causing immediate fruitage of varieties desired. Fruit spurs are cut with a little of the bark and wood of the parent branch, called a heel, and slipped under the bark as in the previous method. By this means fruit may be had the same year of the grafting, provided the spur holds a fruit bud and no evil befalls it.—*H. E. VanDeman.*

THE INDUSTRIALIST.

SATURDAY, MARCH 29, 1879.

The cuts illustrating Prof. VanDeman's articles on grafting are the handiwork of Prof. Walters.

A good rain is the "one thing needful" just now; and we predict that, when it comes, it will be a good one.

According to the Atchison *Champion*, President Anderson and family have taken rooms at No. 1340 Massachusetts Avenue, Washington, D. C.

Mr. Winne, the contractor for the mason work on the new building, has been at work this week, with team and men, grading around the building and putting in the stone steps.

Rev. J. G. Daugherty, of Ottawa, spent a few hours on Thursday in looking through the various departments of the Institution. He seemed well pleased with our work, and in full accord with the spirit of thoroughness and practicality which he found here.

Prof. Failyer will meet the classes in Physics at the lecture room, in the Laboratory, this evening, for the purpose of explaining and illustrating the use of the magic lantern. As the Professor has a number of scenes, he will be able to make the entertainment both pleasant and profitable.

It is reported, on good authority, that, in this part of Kansas, nearly all the fruit buds have been killed. We trust the damage will not be as great as present appearances indicate. The fruit crop is a big item in the list of Kansas industries, and one the loss of which would affect all classes.

Numbers 1, 2 and 3 of the *Kansas Methodist* are just now received. As its name imports, this paper is published monthly in the interest of the Methodist Episcopal Church. It is nicely printed and newsy, and, what is better, it addresses itself to moral and religious questions with earnestness and courage.

Some changes have lately been made in several of the classes. Having finished Agricultural Chemistry and Physical Geography, the classes in those studies now take up Meteorology; and a number of students who took U. S. History the first half of the term, have been transferred to the class in Industrial Drawing.

In publishing some extracts from Prof. Walters' articles on "Education in Switzerland," the Great Bend *Democrat* remarks as follows: "Prof. J. D. Walters, in a series of articles in the INDUSTRIALIST, is giving an outline of the educational system and institutions of Switzerland. He says: [Several extracts]. Mr. Walters' series of articles are very interesting and instructive."

There are more improvements being made in Manhattan this spring than at any previous time since we have known anything of the place. New dwellings, new business houses, new fences, and new sidewalks;—to say nothing of sundry repairs, of trees set out, of streets graded, of stone gutters made, or of the new spire on the Presbyterian Church. These are the true signs of returning prosperity.

The Topeka *Commonwealth*, of March 25th, contains a notice of the marriage of Mr. Jasper M. Howard, a former student of the College, to Miss Vernelia Yarrington, of Wakarusa, Shawnee county. Mr. Howard and bride spent last Sunday in Manhattan, with the parents of the bridegroom, and on Monday departed for Westmoreland, their future home. We bespeak for them a pleasant journey up and down the hill of life.

Alpha Beta Society met as usual on Friday, March 28th. There were not so many members present as usual; but those who were present entered with spirit into the duties of the day, and we had a lively and interesting session. In extemporaneous speaking, the subject of the advantages and disadvantages of Kansas and Missouri was thoroughly ventilated by several members, and in a manner both entertaining and instructive. The debate was upon the question as to whether or not the execution of Charles I. was just, and was ably debated on both sides. The question was decided in favor of the negative. Much history was quoted by each side, a great deal of which was contradictory, making us believe that all historians do not tell the truth. The Society adjourned, after a somewhat shorter session than usual, to meet again next Friday afternoon, when the *Gleaner* will be presented by W. H. Sikes and Miss Sickels. R.

Webster Society was called to order by President Wood. The question, "*Resolved*, That the best interests of the State demand that the proposed amendment to the Constitution be adopted," was discussed with a great deal of animation. Decision unanimously in favor of the affirmative. Extemporaneous speaking was spirited. Several of the leading questions of the day were discussed; among which were the "Extra Session of Congress," "Chinese Immigration," and the "Exemption Law." Mr. Reeve read a very interesting selection concerning the "Good-natured Mule." Mr. Myers read Gilmore's speech on the vacating of the streets of Altoona, which was very well received. The Websters have finally concluded to procure some new constitutions and by-laws. They are to be got up in good style, which is a characteristic of the "Websters."

The following is the question and the programme for the next evening: "*Resolved*, That the Capitol of the United States should be moved into the Mississippi Valley." Affirmative, J. D. Hartmann and D. S. Leach; negative, A. H. Allen and M. A. Reeve. Declamation, Geo. F. Thompson; select reading, Irving Todd. The *Reporter* will be presented by Mr. C. E. Wood. L. *pro tem.*

ACKNOWLEDGMENTS.

Prof. A. E. Blunt sends us a package of his now famous Mammoth White corn.

Dewey & Stewart, Owosso, Michigan. Catalogue of the Owosso breeding stables.

J. B. Root, Rockford, Illinois. Garden Manual and Catalogue of Seeds, Plants, etc.

Cole & Bros., Pella, Marion county, Iowa. Illustrated Spring Catalogue and Guide to the Flower and Vegetable Garden.

Geo. Haskell & Co., Rockford Illinois, will accept thanks for a fine package of seeds. We shall test all of these and report in due time.

Sale Catalogue of Bow Park Herd (Brantford, Ontario, Canada,) of Short-horn cattle, Cotswold sheep, and Berkshire pigs. Sale, April 10th, 1879.

Prof. C. V. Riley, Washington, D. C., Department of Agriculture. Special Report No. 11. The Silk Worm; being a brief manual of instructions for the production of silk. With illustrations. An exceedingly valuable and complete monograph on this very important subjcct.

First Biennial Report of the State Board of Agriculture. A large and handsome volume, replete with information about Kansas. Secretary Gray has so far succeeded in making every one of his reports an improvement upon its predecessor; but we are inclined to think that the climax is reached in this volume. At all events, we are unable to see how it could be improved upon in any essential particular.

NATIONALIST ITEMS.

Great numbers of strangers are daily seen on our streets.

Messrs. Long & Firestone have been flooring their stable.

There is a great demand for laborers now, and they are hard to get.

On Tuesday Morris Pickett's infant son Clarence fell into a kettle of hot lye, and was so badly scalded that he died the next morning.

A hen belonging to Sam Hoyt laid an egg to-day that weighed seven and three-fourths ounces, and measured eight inches in circumference.

There will be a temperance meeting on Sunday evening next, and several during the latter part of next week. The places where they will be held will be announced from the pulpits.

There will be a vacation of the public schools next week, and they will commence again Monday, April 7th. There will be two months more of school before the summer vacation, school closing May 30th.

A sad accident occurred on Monday at 5 o'clock P. M., near the depot. A fireman on No. 6, Geo. T. Veach, was on the ground, and as his engine was moving he started to get on, slipped, and fell under the tender-wheel, it running over the lower part of his body, nearly cutting him in two. In a very few minutes a great crowd gathered and several physicians were on the ground, but it was plainly seen that he could live but a short time. * * * * He was kept under the influence of chloroforn and died, without seeming to suffer greatly, about an hour after the accident. The body was cared for by the undertaker, the Railroad Company, through the Agent, doing all needed. A metallic case was sent on Tuesday, by Superintendent Oakes, and Mr. Wilder telegraphed the friends in Ohio, to which place the body has been sent. A large procession of Odd Fellows, of which order the deceased was a member, attended the remains to the depot. The accident cast a gloom over the whole community.

We were at the new elevator one morning last week, and found it as interesting a place to visit as a museum. We saw a load of corn driven on the scales, weighed, driven up the drive-way into the building and onto the movable platform that dumps the corn; the driver held his horses, somebody took out the end-board of the wagon, a lever was moved, down went the platform at an angle of forty-five degrees, and, as Miss Way would say, "down, down, forever down" went the corn. We looked down into the bin, made like a letter V, and saw the corn going out of the bottom of the bin into the buckets that carried it up the elevator. When the corn was up to the second floor, a broad belt takes it and carries it off above the corn-cribs and dumps it just where wanted—dumping about 200 bushels in fifteen minutes the morning we were there. This is the only elevator in the world that carries the corn to the bins in this way; most of the others take it up into the elevator and shoot it down. We were invited by Mr. Jenkins to go up and see the working of this wonderful mechanism, but, though greatly desiring to do so, and knowing that the elevator stairs must be strongly built, we hardly dared to trust the brain of the *Nationalist*, to say nothing of the avoirdupois, up in the neck of this wonderful monster that was devouring grain by the hundred bushels. Years ago we did go to the top of one of the largest elevators in Chicago, and were wonderfully well paid by the prospect from the windows and the look into the bins below us. This elevator here has about twenty bins, each holding 1,600 bushels of grain, and from one of them a car can be loaded in ten minutes. The engine is a twenty-five horse-power, but was purchased for the St. George elevator, to which it will be moved when that building is finished. An eighty horse-power engine will be put in here, and a grist and flouring-mill will be built. A good engine-house is to be put up for the new engine, and a fine office is to be built near the scales.

We have been in the habit of taking strangers, visitors in town, to the College, the public schools, Rocky Ford, Bluemont, and to see our bridges, etc.; now we have one more place of interest, showing such enterprise that we can speak of and visit, as citizens of the town and country, with just pride and admiration.—*Reporter, in the Nationalist.*

From the biennial report of the Kansas State Agricultural College, we learn that there have been in attendance the past year 238 students, representing 51 counties and States. Of these, as we infer from the report of the Woman's Department, 58 were girls. There appears to be an excellent basis for a good, working college, although some parts are yet in an unfinished condition, the buildings not being all erected and the institution to some extent encumbered with debt. There are thirteen professors or instructors, who have under their charge the subjects of political economy, mathematics, chemistry, physics, botany, horticulture, practical agriculture, mechanics, printing, telegraphy, industrial drawing, music, blacksmithing and household economy. We trust that the enterprise and energy which have marked the progress of this young State will cause its people and government to place the institution on a substantial basis; and, if well conducted, it will many times repay all expenditures, in the practical education of its students, who will carry back the benefits conferred into all the counties of the States from which they come.—*Country Gentleman.*

DIRECTIONS TO APPLICANTS.

TERMS OF ADMISSION.

Candidates for admission must be fourteen years of age, and pass a satisfactory examination in reading; arithmetic, through decimal fractions; and English grammar, to syntax. Classes are started at the beginning of each year in Drill in Arithmetic and Drill in English; and the pupil must have the knowledge above indicated, else he will be unable to retain position if admitted.

Pupils will be received at any time during the year, if able to pass an additional examination upon the subjects studied by the classes which they expect to enter. But they will find it greatly to their advantage to be present at the opening of each term, or as soon thereafter as posssble.

GRADES.

Both the Literary and Industrial recitations are graded daily upon a scale of 100; and an examination of all classes is made at the close of each month. A student not attaining an average grade of sixty is promptly dropped to a lower class, or excluded from the Institution until able to do so. The work of grading is strict and uniform in all the departments, and this process is rigorously used for sifting out incompetent and indolent pupils; thus more than accomplishing all that is designed to be effected by a "high standard of admission." Hence, the student's continuance in the College wholly depends upon his own action.

The course is based upon the determination to make the labor required in the preparation of one industrial and three literary recitations as much as the average student can perfectly perform, in ten hours a day. We design to give the pupil the worth of the time expended at College; and, in order thereto, he must do a full day's work with brain or hand. Only those students who can maintain a standing of ninety in each study will be allowed to take more than the prescribed number of recitations; and no one will be permitted to have less than one industrial and three literary recitations.

RELIGIOUS.

Unless otherwise directed by parents, students are required to attend chapel at 8:30 A. M. on academic days, and divine service once every Sabbath.

EXPENSES.

There are no charges whatever for enrollment, attendance or instruction in the regular courses; nor are there any "contingent fees" for the repair of buildings, for the use of books or apparatus, for diplomas, or the kindred privileges usually grouped under the term "contingent." Male students are furnished instruction, the use of apparatus, instruments or tools, in both the literary and industrial classes marked out for them, without any charge. And the same is true of female students in the regular classes provided for them. Printing and Telegraphy are industrials primarily provided for the education of female students, and male students taking either of these are charged $1 per month for use of instruments.

Instrumental music is a fine art or "accomplishment," rather than a mechanical art. We do not place it among our "industrials" in the same sense, or for the same purpose, that we do those provided for teaching the trades. Accordingly, a fee of $12 per term, or seventy-five cents per week is required from female students for tuition and the use of pianos or organs.

The only charge made for material in either the literary or industrial departments is for the chemicals used by students in laboratory practice, which are furnished at wholesale prices, and amount to but a small sum.

Furnishing an absolutely free education is as much as can be reasonably asked; and the Institution neither boards, clothes, nor supplies the student with text-books. Boarding can be obtained in private families at from $2.75 to $4 per week. Washing costs from seventy-five cents to one dollar per dozen. Text-books, which can be procured in Manhattan, cost from $2 to $5 per term.

No student need expend over $5 per week; and many of our best pupils are living at $1.25 per week. Students desiring to "board themselves" can do so at from $1 to $2 per week. In a club of four young men, renting a house, the average cost to each for the term was $1.11 per week.

LABOR.

Manual labor by the students may be for either of two purposes: First, to acquire skill in a given art; second, to earn money. In the first case, the labor is educational; in the second, it should be paid for by the party benefited.

Educational Labor.—Manual labor in the reciations of the Industrial Departments, like mental labor in those of the Literary Departments, is purely educational and will not be remunerated. While the interest of the student will be held paramount in the direction of this labor, the practice necessary to dexterity will be required.

Remunerated Labor.—When the Institution needs labor on the Farm or elsewhere which is not educational, but simply for its own profit, and which a student is able and willing to perform, it becomes an employer instead of a teacher, and he an employe instead of a scholar. It pays for work, he works for pay. The relation between them is commercial, not educational; and both parties must act upon business principles. Hence, the College furnishes only such employment as its own interests require, and will pay according to the value of the service rendered at from seven to ten cents an hour.

AMOUNT EARNED.

It is impossible to predict how much a given person can earn, since that depends upon what he can do and what work there is to be done. Hence, it is wholly impossible for us to answer the question so often asked: "Do you think I can meet my expenses by work?" Some students make one-half their expenses, some the whole, and exceptional men have made more than expenses. As a rule, a faithful boy skilled in farm work can earn half his expenses on the Farm or in the Nursery. During the year he can ordinarily acquire sufficient skill in the wood or iron shops to enable him to make articles for sale. The whole question is one for his own consideration and decision. We can teach all who come, but cannot absolutely *promise* anything more. Hitherto we have refrained from holding out strong inducements respecting the amount of labor we might have to offer; but in view of the fact that during each of the last three years we have had more to do than the students could perform, we are inclined to give greater and positive encouragement on this point. Any boy who is in dead earnest, who is familiar with farm operations, and who can raise $50 to start with, should be able to carry himself through the four years' course. And certainly this places an education within the reach of every determined boy. As yet we are unable to offer similar advantages to girls, not requiring labor in the College departments which they can perform.

RULES.

1. Behave as a true man or woman should, at all times and in all places.
2. Attend to your own business promptly, thoroughly and courteously; and vigorously let alone that of other people.
3. Penalty: "Leave!"

PUBLICATIONS.

The "Hand-Book," published in 1874, containing a full discussion of the educational question and the aims of the Institution, will be forwarded to any one desiring it.

THE INDUSTRIALIST, a weekly journal edited by the Faculty and published by the Printing Department, contains original and seasonable articles on the Farm, Orchard, Trades, Sciences, and Education. Price, 75 cents a year. Address A. A. Stewart, Manhattan.

CALENDAR.

Winter Term 1879.—Began Friday, January 3d, 1879.

TO NEW STUDENTS.

Bring the text-books you have been using. On arrival, first arrange for your boarding. A. A. Stewart, Sup't Printing Department, will furnish information, either by letter or on application, concerning boarding places or rooms for rent. Report to the President at 8:30 A. M., immediately after chapel, for enrollment.

For further information apply to Jno. A. Anderson, President, Manhattan, Kansas.

LITERARY SOCIETIES.

ALPHA BETA.—Chartered, December 26th, 1870. Meets in College building every Friday at 2 P. M. Ladies admitted. New students cordially invited to attend. W. H. SIKES, President.
MISS MARIA E. SICKELS, Secretary.

WEBSTER.—Chartered, January, 1871. Meets in Telegraph Hall every Saturday evening. Visitors, especially students, always welcome.
H. C. RUSHMORE, President.
J. N. MORROW, Secretary.

RAILROAD TIME-TABLE.

KANSAS PACIFIC RAILWAY.

PASSENGER ARRIVES.

No. 2, going East	11:14 A. M.
No. 4, going East	3:47 A. M.
No. 1, going West	5:10 P. M.
No. 3, going West	4:33 A. M.
No. 7 (freight), going West	8:15 A. M.

Nos. 1 and 2 run daily; Nos. 3 and 7 run daily except Monday; No. 4 runs daily except Sunday. Passengers with tickets are carried on No. 7.
GEO. C. WILDER, Agent.

THE INDUSTRIALIST.

SATURDAY, MARCH 29, 1879.

INDUSTRIAL EDUCATION.

The real value of an education to the student depends upon two things: First, the practical worth of the knowledge taught; and, second, the degree in which he makes it his own. Hence, the ability of any institution to give a practical education depends upon the kind and aim of the knowledge it teaches, and upon the thoroughness of the instruction therein. The State Agricultural College was directly endowed by Congress, and is guided by the State, for the specific purpose of furnishing to the industrial classes of Kansas a "practical" education, that is, "one fit for use." As its name indicates, and as the statistics of the industries of the State require, its chief work must be that of giving a useful and usable education to those who will engage in farming; and, therefore, the Farmer's Course must, from the nature of the case, be its main one.

FARMER'S EDUCATION.

Words and figures are merely instruments with which to record ideas. They are not themselves ideas, nor should they be made the chief end of an education. As a wagon is necessary to haul grain, so are they a necessary part of an education; but as the wagon is not the grain, so they are not the knowledge which the farmer converts into money. Hence, the classics and higher mathematics are not taught. But it will be noticed in the following course that so soon as the pupil acquires working skill in the use of the English language as a tool, and of figures and lines as mathematical tools, those arts and sciences which present knowledge that has a cash value to the farmer are taught as rapidly as their importance and thorough acquisition will permit. Studies numbered (1) and (4) in the second, third and fourth years are the spine of the course, to which the others are as ribs and muscle.

FARMER'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Practical Agriculture (advanced.)	1. Practical Agriculture (advanced.)	1. Botany, Entomology.	1. Botany, Entomology.	1. Physiology.	1. Physiology.	1. Drill in English.	1. Drill in English.
2. Geology, Mineralogy.	2. Geology, Mineralogy.	2. Inorganic Chemistry.	2. Inorganic Chemistry.	2. Rhetoric.	2. Rhetoric.	2. Drill in Arithmetic.	2. Drill in Arithmetic.
3. Polit. Economy, Practical Law.	3. Polit. Economy, Practical Law.	3. Practical Geometry.	3. Industrial Drawing.	3. Algebra.	3. Algebra.	3. Industrial Drawing.	3. Industrial Drawing.
4. Zoology.	4. Zoology.	4. Horticul., Landscape Gardening.	4. Horticul., Landscape Gardening.	4. Practical Agricul. (elementary).	4. English Literature.	4. English Structure.	4. English Structure.
5. Agricul. Chemistry Meteorology.	5. Phys'l Geography, Meteorology.	5. Organic, Analytical Chemistry.	5. Organic, Household Chemistry.	5. Physics.	5. Physics.	5. Adv'd Arithmetic, Book-keeping.	5. Adv'd Arith., Book-keeping.
6. Logic.	6. Logic.	6. Practical Surveying.	6. Household Economy.	6. Industrial Drawing.	6. Industrial Drawing.	6. U.S. History, Industrial Drawing.	6. U.S. History, Industrial Drawing.

WOMAN'S EDUCATION.

Nearly one-half of our students are females, and the Woman's Course is prepared expressly for their liberal and practical education. We have no doubt whatever that practical men and women, who understand what it means and what it seeks to do, will fully endorse it.

WOMAN'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Farm Economy, Special Hygiene.	1. Farm Economy, Special Hygiene.	1. Botany, Entomology.	1. Botany, Entomology.	1. Physiology.	1. Physiology.	1. Drill in English.	1. Drill in English.
2. Geology, Mineralogy.	2. Geology, Mineralogy.	2. Inorganic Chemistry.	2. Inorganic Chemistry.	2. Rhetoric.	2. Rhetoric.	2. Drill in Arithmetic.	2. Drill in Arithmetic.
3. Polit'l Economy, Practical Law.	3. Polit'l Economy, Practical Law.	3. Industrial Drawing.	3. Industrial Drawing.	3. Algebra.	3. Algebra.	3. Industrial Drawing.	3. Industrial Drawing.
4. Zoology.	4. Zoology.	4. Horticul., Landscape Gardening.	4. Horticul., Landscape Gardening.	4. English Literature.	4. English Literature.	4. English Structure.	4. English Structure.
5. Phys'l Geography, Meteorology.	5. Phys'l Geography, Meteorology.	5. Organic, Household Chemistry.	5. Organic, Household Chemistry.	5. Physics.	5. Physics.	5. Adv'd Arith., Book-keeping.	5. Adv'd Arith., Book-keeping.
6. Logic.	6. Logic.	6. Household Economy.	6. Household Economy.	6. Industrial Drawing.	6. Industrial Drawing.	6. U.S. History, Industrial Drawing.	6. U.S. History, Industrial Drawing.

MECHANIC'S EDUCATION.

Because of the adaptedness of the leading course to the wants of the intelligent mechanic, it has been found practically unnecessary to diverge from the Farmer's Course. Additional studies, specially adapted to the mechanic's use, will be furnished in a Post-Graduate's Course.

If it be urged that the distinctively agricultural knowledge taught in the Farmer's Course is not directly valuable to the mechanic, we reply that, admitting the point for the purpose of argument, yet: 1. This knowledge is of more practical value to the mechanic than is the Latin, Greek, or a half dozen other things embraced in the usual course preparatory to the professions; 2. That the great majority of Kansas mechanics will also be more or less engaged in agriculture; 3. That those studies in the course which are directly valuable to the mechanic, together with the shop facilities, offer a better mechanic's education than can be elsewhere found west of the Alleghanies.

INDUSTRIAL DEPARTMENTS.

Having knowledge in the head is one thing; ability to use it with the tongue, fingers or feet is quite another thing. Both are vital to success in practical life. A man might thoroughly understand the theoretical principles of carpentry, and yet, not having used the tools, be wholly unable to earn carpenter's wages. So in all other vocations. Accordingly, instruction is given in the following well-equipped Industrial Departments, and every student is required to recite in some one of them, as selected by the pupil or parent:

FOR MALE STUDENTS.	FOR FEMALE STUDENTS.
The Farm.	Dress-making.
The Nursery.	Printing.
Carpentry.	Telegraphy.
Cabinet-making.	Scroll-sawing.
Turning.	Carving.
Wagon-making.	Engraving.
Painting.	Photography.
Blacksmithing.	Instrumental Music.

Each of these departments is conducted exactly as in daily life, and aims to give precisely the drill received by an apprentice. No charge is made, either for tuition or material, from male students taking the Industrials provided for them; nor from female students taking the ones provided for them, except in the Department of Instrumental Music. Male students taking either Printing or Telegraphy are charged $1 per month for the use of material and instruments.

DEPARTMENTS OF INSTRUCTION.

DEPARTMENT OF AGRICULTURE.

PRACTICAL AGRICULTURE.

Second Year:—General principles of breeding; history and characteristics of breeds; adaptation of different breeds for special purposes and localities; implements of simple tillage; mechanical principles involved in their construction; action of the plow upon soil and subsoil; principles of draught; influence of different adjustments upon draught; use of the dynamometer; value of hoed crops in a system of husbandry; the cultivation of corn and roots; soils that need drainage; how to lay out a system of drains; house drainage; sewerage.

Fourth Year: General view of agriculture, ancient and modern; agricultural progress of the last century; relative advantages of mixed husbandry and special farming; the selection and arrangement of the farm with reference to the system to be pursued; rotation of crops; general advantages of a rotation; the best rotation with reference to disposition of labor, production of manure, and extermination of weeds; pasturage and production of grain and forage crops; manures, how best housed and applied; composting manures; commercial fertilizers; systems of feeding; stall feeding; steaming food; soiling; experiments in feeding; farm buildings; farm-houses; barns.

FARM ECONOMY.

Woman's Course, Fourth Year: Dairy products as human food; influences affecting character of milk; manufacture of condensed milk; the factory system and household plan of cheese-making; treatment of rennet; general process of cheese manufacture; subsequent treatment of cheese; butter-making; creameries; "deep" and "shallow" setting systems; general process of butter-making; packing and preserving butter.

DEPARTMENT OF BOTANY AND PRACTICAL HORTICULTURE.

This department embraces a course of instruction in the elements of botany, structural and systematic, with a constant attention to the practical application of botany to the farm, orchard, garden, nursery and forest; also a course of lectures on Landscape Gardening. The instruction is mainly given by lectures, accompanied by regular practical drill in all the work of the fruit, vegetable and flower gardens, nursery, orchard, vineyard and ornamental grounds.

The lectures in Practical Horticulture embrace the following and kindred subjects: The relation of atmospheric motion, moisture and temperature to horticulture; seeds, the means of collecting and preserving; propagation, by seeds, cuttings, layers, suckers, grafting, budding; care of young plants; improvement of varieties; management of commercial and farm nursery; modes of pruning; the orchard; fruit suitable for orchard and garden culture; the flower, vegetable and fruit garden; importance and mode of forest culture; shelter belts and their influence; weeds and useful plants; noting the species of trees worthy of culture, either for profit or ornament.

LANDSCAPE GARDENING.

The lectures on Landscape Gardening not only unfold the accepted principles of the art, but at the same time give special attention to such applications of the art as may be made universally available in laying out and improvement of farms and the homes of the people. These lectures are accompanied by a practical drill in in the work of laying out and plotting grounds topographically.

CHEMICAL DEPARTMENT.

PHYSICS.

This includes a full consideration of the laws of mechanics, of liquids, gases and vapors, weights and measures, and specific gravity, followed by experimental study in the Physical Laboratory of the laws of heat, light, with spectrum analysis, electricity and magnetism, and the relation of these forces to plant and animal life. Text-book, Ganot.

INORGANIC CHEMISTRY.

This course is opened with a careful study of chemical forces and the laws governing chemical combination. The elements, with their compounds, are next considered in succession as to their history, properties, manufacture, and especially with regard to their uses on the farm and in the arts. These lectures are accompanied by an extended course of laboratory practice in which each student performs every experiment with his own hands. Text-book, Eliot & Storer.

ORGANIC CHEMISTRY.

This comprises a thorough study of the chemistry of the organic compounds, the composition of plants and of the various compounds derived from them. Constantly accompanied by laboratory practice.

CHEMICAL ANALYSIS.

In this course each student is furnished his stand in the Qualitative Laboratory, completely furnished with apparatus and chemicals for his own use. He here performs analyses of farm soils, plant ash, commercial manures, ores, mineral waters, commercial compounds, etc. After completing this course, he enters, if he desires, the Quantitative Laboratory, where he pursues a full course in quantitative analysis. Text-book, Kedzie's Manual.

AGRICULTURAL CHEMISTRY.

This includes a thorough consideration of the application of chemical principles to the economy of the farm; the origin and formation of soils; the classification and composition of soils; the analysis of soils and their adaptation to purposes of production; the composition and use of manures; composting; chemistry of farm operations, such as plowing, fallowing, draining, etc. Text-book, Johnson's "How Crops Feed."

METEOROLOGY.

Embracing the composition of the atmosphere; atmospheric pressure; temperature and humidity; laws of storms; rain, snow and atmospheric electricity. A full course in meteorological observations is taken under direction of the Signal Service. Text-book, Loomis' Meteorology.

MINERALOGY.

This includes the study of the laws of crystallography, with the properties, forms and uses of the principal minerals of the United States. Blow-pipe analysis forms a very important part of the course, each student being required to name and identify a large series of minerals. Text-book, Dana's Mineralogy.

HOUSEHOLD CHEMISTRY.

A course of lectures on this subject is yearly delivered to a class of young ladies. The course embraces the chemistry of cooking; the composition of food; bread; tea, chocolate and coffee; butter and milk; ripening and preservation of fruits, etc.

SPECIAL COURSES

Are constantly in progress in Assaying, Pharmaceutical Chemistry and Photography.

ENGLISH LANGUAGE.

Words are simply tools used to express ideas; and, since the vast majority of our communications are made by the employment of spoken or written words, skill in using them is as profitable to the industrialist as dexterity with the needle is profitable to the seamstress. The direct aim of the course is to make the student skillful and intelligent in handling the machinery called language, just as an engineer handles a locomotive; and no drill will be omitted, or effort spared, to gain this end. Apart from the course itself, which is far more practical and complete than that usually found in literary colleges, the constant attention given this subject by all the departments, and especially the practice required in the printing classes, affords superior advantages to the student.

DRILL IN ENGLISH.

"As grammar was made after language, so ought it to be taught after language."—*Herbert Spencer.*

Drill in English embraces the following topics:

Sounds of the language; drill in producing the vocal, sub-vocal and aspirate elements with accuracy, distinctness and volume; vowels, consonants.

Letters: Form; power; rules for spelling, drill.

Words: Signification, properties, modifications, variations, relation and dependence.

Sentences: Drill in statement of ideas; description, clearness, terseness, vigor; business letters, discussion; capitalization; syllabication; punctuation; construction and analysis of sentences; elements, uses and names; criticism of compositions printed as written; proof reading; grammatical construction; superfluous words and clauses; drill in reading, speaking and penmanship.

Text-books: Webster's Academic Dictionary; Lee & Hadley's Advanced Lessons in Language.

Pupils deficient in spelling, etc., should enter the printing class, the printing-office being the work-shop of language.

STRUCTURE OF ENGLISH.

ELEMENTS OF WORDS.—The end aimed at in this study is to learn everything about words which will aid in their effective use. Among the topics included are:

Roots: What are they; their origin; their force and value as an element of language; the manner of their growth into different parts of speech.

Stems: Their derivation; their offices and properties; their relation to other parts of words.

Prefixes and Suffixes: The several sources whence derived; the relation of their force or significance to those sources; explanation of the laws and principles governing their use along with stems.

Compounds: Their value; their properties and uses; the laws governing their formation.

Synonyms: Definitions; causes of their abundance in English; the principles to be observed in choosing among them, to express a thought.

Criticism: This constitutes a prominent part of the exercises of the pupil through his whole course in the study of English. It not only diversifies and enlivens the class-room exercise, but reduces to practice the principles of the structure of the language. By this means, the student acquires not only a knowledge of English, but readiness and accuracy in speaking or writing it. The exercises in criticism embrace not only examination of selected matter, but original composition.

ELEMENTS OF SENTENCES.—The purpose in view in studying this subject is not to traverse the ground gone over in the study of grammar, but to fix in the mind of the student a clear understanding and remembrance of names, the properties and offices of the several classes of words entering into an English sentence, by showing him the reason of things; to make more simple, as well as interesting and practically useful, a study otherwise "dry and unprofitable" in many cases, by explaining the reason of the verbal forms and changes, the rules and maxims he is to remember and observe in his use of language. In the same manner he is conducted through a study of the mutual relations and dependencies of the several elements making up a sentence.

MATHEMATICAL DEPARTMENT.

Figures and lines, like words, are only instruments with which to convey ideas, or perform operations that cannot be easily done without them. The arithmetical principles used in business are few and simple; but accuracy and rapidity in computation are only gained by practice. College graduates often fail to retain clerkships, not because they do not know *why* given operations are performed, but because they can neither add, multiply or divide with that habitual correctness which renders their work reliable.

DRILL IN ARITHMETIC.

The chief design of this study is to make the student expert in the use of numbers, as employed by the industrialist for profit. The occupation of a successful farmer demands the application of every principle of practical arithmetic, and is taken as a starting point, rather than that of an abstract system. Beginning with a simple cash account, book-keeping is gradually developed to the full extent of its real utility. The areas of fields, expense of crops, construction of houses, sales of produce, and investment of capital, involve all the fundamental operations, and those of profit and loss, commission, taxes, insurance, exchange and stocks. Following this line, the student, so far from hammering away at "pure" science draws from the mathematical store-house what he needs, and sees why he needs it. Accuracy of calculation and posting, rather than a *mere* comprehension of the principles, is aimed at. Besides the recitation-room drill in business forms, practice in the field is also given. Estimating the number of cords in a pile of wood said to be 100x4x4 feet is one thing; measuring a pile of wood through which any number of cats may be harmlessly thrown, and in which four-feet sticks are the exception, is quite another and more difficult thing.

ARITHMETIC AND BOOK-KEEPING

Is a continuation of the above, having the same purpose and adopting such methods as the necessities of the class indicate. Thorough instruction in the principles and forms of business law is given. It will be seen that this method of teaching book-keeping, besides ensuring arithmetical practice, develops practical skill in that important art.

ALGEBRA.

Algebra is included in the course as a preparation for the study of Surveying.

DRAWING.

The practical value of Industrial Drawing can hardly be overestimated, first, because its study is the best drill for the development of the perceptive faculties, which are the ones most employed in daily life; and, second, because the working classes make a far greater use of lines than they do of figures. A farmer follows a line when laying a straight furrow; the carpenter uses the square and rule twenty times as often as he does figures; and a woman in cutting a pattern, or deciding that one bonnet is prettier than another, does so by the line or "form." So that either in its direct application, or in the exercise of that taste which comes from skill in using lines, this branch of mathematics is quite as important as a means of "mental discipline" as is the branch of computation, and is of far greater daily use. The admiral system of Prof. Walter Smith, Art Director of Massachusetts, is thoroughly followed through the grades of Free-hand, Geometrical, Object, Model, Perspective, Mechanical and Topographical Drawing, during the terms indicated by the Course of Study. In addition, constant practice in the application of lines to metal and wood is furnished in the Blacksmith, Carpenter, Turning, Scroll-sawing, Carving, Engraving and Printing shops, and to fabrics in the Sewing Department.

PRACTICAL GEOMETRY.

Not one farmer in a thousand ever uses the transit in surveying his land, the testimony of the county surveyor being decisive in court; but every farmer makes countless applications of lines and angles in laying off fields, roads, gardens, planning houses, determining levels, etc. The object of Practical Geometry is to teach the properties and uses of angles, and to make the student skillful in the application of lines to the field by the use of such simple instruments as are always within reach, or within his ability to construct; and accurate in the transferring of plans to the grounds, board or block.

PRACTICAL SURVEYING.

The drill in the use of figures and lines given by the mathematical course as above indicated, renders the mastery of surveying an easy task. There is no calculation made or formula used by the working engineer which cannot be readily understood and performed by a skillful arithmetician after proper instruction. The hand-book of the engineer is accordingly supplemented with such special guidance as is found necessary for a full comprehension of the mathematical principles and their applications; and extended field practice is required in the use of the compass, level, transit and theodlite.

STUDIES SPECIAL TO WOMAN.

Besides the studies already indicated, attention is called to the following:

SPECIAL HYGIENE.

As shown in the course, one term is devoted to the study of Physiology, from the text-book of Dr. J. C. Dalton. This is followed in the fourth year by a course of lectures to young ladies by Mrs. Cripps on the subject of Hygiene, embracing such instruction in hygienic matters as are valuable to woman.

FARM ECONOMY considers those affairs of the farm which usually come under the supervision of the farmer's wife or daughter, and which are not included in "gardening" or "household economy;" such as butter and cheese-making, dairy management, etc. A course of lectures is delivered by the Professor of Practical Agriculture. See heading, "Farm Economy."

GARDENING is included in Practical Horticulture. See heading, "Landscape Gardening."

HOUSEHOLD CHEMISTRY. See heading, "Household Chemistry."

HOUSEHOLD ECONOMY

Follows Household Chemistry and consists of lectures by Mrs. Cripps on the art of house-keeping, embracing cookery, domestic management, and kindred topics. Many elderly gentlemen sufficiently know, and more young gentlemen will duly discover, that systematic knowledge of how cooking ought to be done is luminously different from the ability to do it. Instruction without practice can effect but little. Accordingly, a kitchen laboratory has been completely furnished, and affords every facility for drill in the art of cooking. This drill chiefly differs from that of a kitchen in the respect that after a girl has learned to wash dishes or pare potatoes she is not kept everlastingly at either. After full trial, we have found it just as feasible to give this practice, with profit and pleasure to the pupil, as it is to give laboratory practice in chemistry,—and no more expensive.

Mathematics.—Practical, direct and thorough drill in Arithmetic, Book-Keeping, Industrial Drawing, Algebra, Geometry, Trigonometry, Surveying, Mechanics and Engineering. Work in Field, with Tape Line, Chain, Compasses, Transit and Level. The course is shaped for the benefit of the farmer, mechanic, or business man rather than for the benefit of the astronomer.

Special for Woman.—Special lectures on Farm Economy, by Prof. Shelton, discussing the Dairy, Poultry, etc. Gardening, by Prof. Van Deman, treating of the vegetable, flower, commercial and ornamental. Household Chemistry, by Prof. Failyer, consisting of the chemistry of cooking, bread, tea and coffee, butter, cheese, dyeing and coloring, bleaching, disinfectants, ventilation, etc. Special Hygiene, by Mrs. Cripps.

THE INDUSTRIALIST

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A Lecture on Astronomy.

One of the managers of Oakwood Seminary, at Union Springs, recently gave a lecture at that institution on astronomical magnitudes and distances, in which some novel illustrations were presented.

He began by describing the mode of determining the size of the heavenly bodies, and alluded to the obscure perceptions of philosophers before the days of accurate science. Anaxagoras went ahead of the men of his time, and asserted that the sun must be as large as the whole of Peloponnesus. Since then, common observers could perceive that the moon must be 2,000 miles in diameter, by the breadth of its partial shadow upon the earth in time of an eclipse. They could see the comparative size of the earth and moon by the curved shadow of the earth on that satellite. In various ways the earth was found to be a globe, and its distances from the sun and moon were determined. The man who declared that the earth was flat, as he knew by looking at it, would be much puzzled to explain how we could take ship at New York, pass the Straits of Gibraltar, through the Mediterranean, the Suez Canal, the Indian and Pacific oceans, to San Francisco, and then by railroad directly east to New York, from which he started. These remarks, however, were merely preliminary.

He then pinned on the wall of the lecture-room, at one corner, a circle cut from white drawing-paper two feet in diameter; this represented the sun. In another corner he pinned on a black-board (so as to be distinctly seen) a white paper circle a fourth of an inch in diameter; this represented the earth, on the same scale. Another circle the sixteenth of an inch in diameter was the moon, and was visible only to the nearer students. Fearing they would have from this too puny an idea of the earth, he gave an illustration of its magnitude, first explaining the vast bulk of a cubic mile. It would require 2,000 men, working hard every day from day-dawn till dark, and beginning when twenty years old and ending at seventy, to shovel over a cubic mile of earth. Now, to give an idea of the bulk of the earth, it was stated that if a man should attempt to count over the cubic miles, at the rate of one a second, without cessation, day and night; if he had commenced when Adam was in Eden, he would not have completed the task at the present time.

Yet the bulk of the earth was represented by the lecturer the size of a pea. The sun would be represented by three bushels of peas, which would require ten days of rapid counting to enumerate. On this scale the earth would be two hundred feet from the sun, and the planet Neptune, the most remote of the solar system, would be a mile and a quarter. Where would be the nearest fixed star? No less than 30,000 miles off, on this minute scale.

The lecturer next gave a striking illustration of the velocities of the heavenly bodies, stating in the first place that one of the most rapid motions with which we are commonly familiar is that of a swift express train, moving at the rate of a mile a minute. He had a little instrument before him by which a hammer could be made to strike a bell, either slowly or rapidly, at will. "Suppose," said he, "that a bell is hung on every mile-post along the line of a railroad, so that each bell is struck by the passing train. Once every minute you hear the stroke of the bell." Then imitating this on the instrument before him, a minute seemed a long time for the large audience to wait between these strokes. Next a cannon ball was shot along the line of the railroad; it would strike the bells with intervals of only seven seconds—which was imitated on the instrument. A large bell was then supposed to be fixed over the earth, and not moving with it; a line of mile-posts would strike it successfully every three seconds—this was again imitated by the strokes of the bell. The attention of the students was then called to the velocity of the earth in its orbit, in which it had to accomplish nearly 500,000,000 miles a year. The bell was then struck often enough to represent the miles per second. The effect on the audience was electric. The contrast between this and the velocity of the express train was striking indeed.

The motion of the fixed stars was referred to. Although called "fixed," they really have some motion, which, however, is scarcely perceived even in the lapse of centuries. There are a few among the nearer whose velocity has been ascertained with partial accuracy. There is one little star in the constellation of Swan (known as 51 Cygni) which is moving rapidly through space. To show its velocity, the lecturer rattled the bell at the rate of seventeen times in a second,—the number of miles which the star accomplishes in that brief period of time. But as it is so far from us that its light is nine years in reaching us, it requires 350 years to make an apparent distance in the sky equal to the breadth of the moon. If its course should be changed, and turned directly toward us, with its velocity of seventeen miles per second, it would be 40,000 years in reaching us.

Some other examples of a similar character were given. The space between the many fixed stars, which we see at all distances, had been estimated to be as great from each other as we are from the nearest; so there is no danger, while they are rolling onward with such amazing velocities, that they will ever come in contact. The fixed stars are like our sun; if they were smaller or less bright, we could not see them—their light could not reach us. The sun is sixty times brighter, for an equal amount of surface, as the dazzling Drummond light; and yet suns larger or with more light than ours are removed to such an immense distance that they become only twinkling points seen in the darkest nights. The most powerful telescopes are unable to show their disks, although if only as large as our sun, a swift express train would be three years crossing their face. The light from the North Star, flying towards us 180,000 miles a second, is thirty years in reaching us; and if a cannon ball could have been fired toward the North Star when Adam was in the garden of Eden, and continued with undiminished velocity until the present time, it would have passed over only a two-thousandth part of the distance—requiring twelve million years more to finish its journey.

There is no speculation or guess-work about this matter; it has been determined with as much certainty (although with somewhat less accuracy) as the distance between New York and London.

An interesting and wonderful truth has been developed by the spectroscope. It shows us that the light of the sun and the light from the fixed stars are produced by the same causes, or are the same kind of light—showing that this immense universe of suns and worlds was created by the same Architect, who still upholds it, and that it is not a jumbled mass controlled by chance. Another lesson is taught. We strain the imagination on and on, and find ourselves utterly unable to grasp in thought the limits of this system, or bounds of space. No faculties were ever given us to accomplish this task. We utterly fail to comprehend infinity. We should therefore receive without questioning the great truths which have been revealed to us, and not attempt with our puny comprehension to alter the laws which govern this vast empire. It would be less wise than for a fly to criticise the construction and work of a steamship or an astronomical telescope.—*Country Gentleman.*

With Our Exchanges.

On all the peach trees that the fruit buds have been killed by the severe cold weather of winter, there should be a severe shortening-in. Cut back the branches from one-third to one-half, and get a growth of young, thrifty wood for bearing next year. Be sure, however, that the fruit buds are all killed, for if one-fifth are left unhurt, there will be as many as are needed for a good crop.—*Coleman's Rural World.*

Hon. Geo. W. Glick left at this office, last evening, a quarter of a peck of new Early Rose potatoes, just digged on his farm near this city. Mr. Glick thinks he has discovered the secret of growing potatoes in the winter as well as in the summer season. He has been experimenting for some time in this direction. Just think of new potatoes on the 28th of March, grown in Kansas and already fit for table use. We have never heard of the like before. And these potatoes were not grown in a hot-house.—*Atchison Champion.*

Nicodemus is located near the east line of Graham county, and about the center of the county north and south, on the south fork of the Solomon River, in a beautiful and fertile section of country. It now contains 35 dwelling houses, one general store and post-office, one real estate office, one hotel, two livery stables, and two churches—Baptist and Methodist. The Baptist Church contains forty members, Elder Silas M. Lee, pastor. The Methodist Church contains twenty-five members, Rev. J. Miles, pastor. The colony, as a whole, is in a prosperous and flourishing condition, but there are instances of great destitution and want.—*Smith County Pioneer.*

We hear of an increasing demand among our farmers for stock of all kinds. Our article on "sheep-raising," in our emigration edition, has had the effect of directing general attention to this branch of stock-raising; and if there is not a very large increase in the number of sheep in another year from this time, we will be very much mistaken. The probabilities of an immense and unusual corn crop this season will cause our farmers to look around for an adequate supply of stock to feed it to the next winter. It has long been the opinion of many intelligent agriculturists, not only in this, but in other sections of the State, that there was danger of an over-production of wheat, and that a diversion to one crop, to the large exclusion of other farming industries, can but result badly for the general prosperity of the State.—*Wichita Beacon.*

In speaking of the Massachusetts Agricultural College, the American *Cultivator* says: "The agriculturists of this State desire to see the institution more of an agricultural school and less of a college, in the common acceptance of the term. More agriculture, with less German, mental science and astronomy, is the demand of the hour. The aim and object of this agricultural school should not be to educate young men off the farm, to treat every student as though he was going into a learned profession, but to teach them superior methods of cultivating our New England farms; to make them industrious, intelligent and successful farmers; to enable them to earn their own living, instead of being burdens upon society, or creatures of State bounty. The test of our State College should not be the number of professors sent to Japan, but rather the number of educated farmers secured for Massachusetts.—*Grange Bulletin.*

THE INDUSTRIALIST.

SATURDAY, APRIL 5, 1879.

E. M. SHELTON, Managing Editor.

ASSOCIATE EDITORS, MEMBERS OF THE FACULTY.

Experiments on the College Farm. No. III.

EXPERIMENTS WITH SEED CORN.—For some years it has been a prominent object of this department to improve our field corn from year to year, and give to it the greatest possible uniformity with respect to valuable qualities. To this end, we have carefully selected our seed each year, having in mind the stock breeder's maxim, "Breed only from the best." Our success in this endeavor has amply repaid the outlay, but without doubt it would have been much greater had we at all times felt quite certain what constituted the best. Among the problems that have always arisen at the time of selecting such corn, is the question, Which is the most profitable corn for the farmer—that having the largest or the smallest number of rows of grains on the cob? To test this matter as far as possible, and in order to study the relation between the number of rows of corn and size of ear and cob, fifty ears of corn were selected of each of the following sorts: 10, 12, 14, 16, 18, 20, 22 and 24-rowed. The kind of corn used mainly in this experiment was the large, white "Dent," which was selected from a commercial crib in this city. In making these selections, the discovery was soon made that the most unusual sorts were those of 10, 22 and 24 rows and upwards, ears having 26 rows being very rare indeed.

Every ear of each sort was measured at its middle diameter, and length, and each lot was weighed, shelled, and then the cobs weighed separately. From data thus obtained table No. 1 is prepared.

TABLE NO. 1.

No. of rows per ear.	*Av. diameter of ear—Inches.....*	*Av. length of ear—Inches.....*	*Av. weight of ear—Pounds.....*	*Av. weight of cob—Pounds.....*	*Av. weight of shelled ear—Lbs.*	*No. of ears to one bushel of 70 lbs.*	*Shelled ears to 1 bushel of 56 lbs.*
Ten.....	1.97	8.82	.62	.10	.52	112.9	107·6
Twelve.....	2.1	9.44	.77	.13	.64	90.9	87.5
Fourteen.....	2.17	9.71	.84	.13	.71	83.3	78.8
Sixteen	2.22	9.03	.82	.12	.70	85.3	80
Eighteen.....	2.3	8.78	.85	.13	.72	82.3	77.7
Twenty...	2.34	8.31	.81	.12	.69	86.4	81.1
Twenty-two	2.44	8.03	.81	.12	.69	86.4	81.1
Twenty-four.....	2.47	7.48	.78	.12	.66	88.4	84.8

The effect of the number of rows upon the yield per acre is shown in table No. 2. In this table it is assumed that the yield of the ten-rowed sort, per acre, is forty bushels of ears of seventy pounds, or, leaving out the cobs, the same number of shelled bushels of fifty-six pounds. The yield of all the other sorts is found by simple proportion thus:

Weight of 10-rowed ears. Weight of 12-rowed.

.62 : **.77** ::

Yield of 10-rowed.

40 : **49.6** bushels =

the yield of the twelve-rowed sort.

TABLE NO. 2.

	10-rowed.	*12-rowed.*	*14-rowed.*	*16-rowed.*	*18-rowed.*	*20-rowed.*	*22-rowed.*	*24-rowed.*
Yield per acre in bushels of ears	40	49.6	54.1	52.9	54.8	52.2	52.2	50.3
Yield per acre in bushels, shelled	40	49.2	54.6	53.6	55.3	53	53	50.7

It is not pretended that these tables show positively what is and what is not the best kind of grain. For example, the kind of corn shown here to be the most profitable might *in the field* prove the least hardy or prolific. What these tables do is to establish a strong probability, and this becomes something more than a probability when we reflect that sub-varieties of corn are not based upon the number of rows of kernels upon the cob. There is no sort of corn with which I am acquainted, in which variations as to the number of rows of grains, greater or less than those of the tables, do not occur. It is therefore a matter of very great importance to the farmer that he understands what arrangement of corn upon the cob gives the best results, and it is believed that these tests will not prove uninstructive under this head.

The facts brought out by this examination are as follows:

1. As the number of rows of corn of the cob increases, the diameter of the ear increases, while its length increases only until the medium number of rows was reached, when it rapidly declines.

2. The weight of the ear, and to some extent the weight of the cob, and in a marked degree the weight of the shelled ear, increase until the medium rows are reached, when they rapidly decline.

3. The variation in the weight of the cobs was only slight, but the heaviest shelled ears were found upon the heaviest cobs.

4. The number of whole and shelled ears required for a bushel is greatest with the light-rowed, and fewest with the medium-rowed sorts.

5. The average of the eight lots employed shows that a bushel of 70 pounds contains 4.7 ears (equal to 3.1 pounds of shelled corn) more than a bushel of 56 pounds of shelled corn.

6. The obvious corollary of the above is, that the most profitable corn is that having a medium number of rows to the ear.—*E. M. S.*

Why Farmers Should Keep Accounts.

Every individual should keep a cash account, in order that he may know how much money he receives, whence it comes, and whither it goes. Very few farmers are able to tell how much money they have received, during a year, from their farm products or stock, simply because they have failed to make a record of it. Recording every item of cash paid out, and for what purpose, leads most persons to be more careful and judicious in the manner of spending it. Again, if every farmer were to record accurately all the business transactions which he has with his neighbors, it would save many disputes, much hard feeling, and sometimes an expensive lawsuit. It not unfrequently happens that two neighbors have various business transactions back and forth, allow them to run for some time, and trust everything to memory. One remembers a certain thing one way and the other in another way; a dispute arises, and much bad blood is stirred up simply because the matter was not recorded at the time it was transacted. The farmer who keeps a record of these things is also able to tell, in a very short time, just how much he is indebted to each of his neighbors, or how much they are owing him.

Some persons run up an account at a store, and when the merchant presents his bill they are surprised at the magnitude of it, and perhaps wholly unprepared to meet it. If they had kept a record of it themselves, they would have seen just how fast it was accumulating, possibly been a little more careful about increasing it, and found themselves ready to meet it at the proper time.

The farmer should also keep an account with each of his farm products, and with the different kinds of live stock which he raises. Let him open an account with every wheat-field, corn-field and oat-field which he plants, with each herd of cattle, horses or hogs which he raises for market, debiting each account to all the labor and money expended upon it and crediting it by all that he receives from it. In a series of years he will be able to tell which department of his farm has yielded him the best return in proportion to the amount spent upon it; or, in other words, in what branch of farming he has been most successful. He will therefore extend his business somewhat in the direction of his greatest success, taking, not the results of one year, but those of a series of years as the basis of his action.

It is said that the farmer has not time for all this, that he cannot afford it. The truth is, it takes but very little time if done in the most simple way. Let him purchase a Ledger Day-Book, ruled with double money columns on the right hand side of the page. Write the title of the account at the top of the page, giving each account one or more pages. Enter every transaction under its appropriate title on the day on which it occurs, placing the date at the left margin, writing the amount of all Dr. items in the left-hand money column, and all Cr. items in the right-hand money column. A balance can then be easily struck at any time, showing a definite result. This, if the book is placed in a convenient position, requires very little time and pays a hundred-fold for the labor of recording it.—*J. E. Platt.*

Education in Switzerland. No. V.

Fellenberg died in 1846, and his family discontinued the agricultural departments of the institution. The Poor School, however, is still flourishing, and the principles developed by the distinguished philanthropist have become the foundation of thousands of educational institutions throughout Europe. An inscription on the door-arch of one of the buildings at Hofwyl reads, "Man is but a bundle of habits." This laconic sentence contains the essence of Fellenberg's teaching; and it might indicate to his colleagues on Columbia's shore that their mental philosophies and their classics, of course, are just exactly the thing that will superabundantly produce a monster crop of mechanics, practical business men, and farmers. Fellenberg's great aim was the development of all the faculties of nature,—physical, intellectual and moral,—to train and unite them into one harmonious system, thus forming the most perfect character of which the individual is susceptible. He was successful.

From 1832 to 1850, following Fellenberg's example, the different cantons provided for scientific or "real" departments in the cantonal gymnasia. These "real" schools, of which Switzerland now has about twenty-five, are slowly absorbing the bloom of youth, and the war between the classics and sciences, waging in the United States, is also known to the Swiss. Like the gymnasia, these real schools are giving a very thorough education. The courses cover five years. German and French are obligatory, and absorb about one-fifth of the time given to instruction. Italian and English are optional.

I will give here a short sketch of the plan and scope of instruction of the Real School of Soleure. In mathematics, the first year takes up arithmetic and book-keeping; the second, geometry and algebra; the third, stereometry and higher algebra; the fourth, plane and spherical trigonometry, and mechanics; the fifth, geometrical and algebraic analysis, and surveying. Free-hand drawing is taught through the whole course; geometrical drawing, the third year; and mechanical drawing, the fourth and fifth. Physics is introduced the third year, chemistry the fourth, and analysis the fifth. A course of lectures on technology is also given the fifth year. Botany is taught the second year; the third year disposes of physiology, anatomy of plants, and zoology; the fourth year is devoted to mineralogy; and the fifth, to geology. Geography and history are taught the first three years. The recitations are of one hour's duration, except in mechanical drawing, which takes up three hours, or an afternoon, once a week. The recitation hours run from 7 A. M. to 12 A. M., and from 1 P. M. to 4 P. M. Gymnastics are obligatory twice a week. Military tactics are taught one evening per week in the summer, and on Sunday forenoon after mass or sermon, which are always held early in the morning. Recitations are heard on Saturday as well as any other day. Saturday afternoon is devoted to modelling in clay, plaster Paris, wood, or metal, in the mechanical work-shop.

For many vocations these real schools give a sufficient education: like the gymnasia, they are thorough. For those students, however, who desire to go to the very depth of mathematical or technical science, they are preparatories for the federal Polytechnicum at Zurich, an institution which is perhaps not equaled in any land. When, in 1848, the Jesuits were overthrown and the new constitution of the republic was framed, it was one of the first grand deeds of the newly-organized government to provide for this institution. Liberal donations by the city of Zurich caused its location there. A building costing over a half a million of dollars was erected, and to-day it is a center of learning to which students flock from every country on the globe. Its average attendance is nearly one thousand, and its professors number over sixty. The yearly appropriations of the federal government, for its support, amount to a quarter of a million francs.

Space does not permit us to give here a minute description of the curriculum of this institution. Courses are given in civil engineering, forestry, mechanics, technology, pharmacology, architecture, and pure mathematics. The courses cover from two to four years. The examinations for admittance are severe. It would be difficult for a majority of the graduates of our colleges to pass them.

Industrial instruction, strictly so called, is very unpopular in Switzerland. What is most conscientiously carried out in Switzerland is thorough general education—education for the masses, reaching down to and purifying, as it were, the lowest depths of society; and not, as in some countries, leaving them to form, in their stagnation, a foundation so unsound and impure as to cause the whole superstructure to be rotten and insecure. Rumbold, an authority of that country, says: "To raise each individual member of the community up to a given standard, and, having thus far developed him, to leave him to work out the rest by his own faculties, and with the help of the natural gifts and aptitudes Providence may have bestowed upon him,—such seems to be the simple sum total of the Swiss philosophy of instruction for the people."

There are, nevertheless, schools for industrial instruction, several of which are sustained by private means. Among these are: The industrial college for French Switzerland, at Lausanne; a school for watchmakers, at St. Imier, in the canton of Bern; a school of design for the promotion of carving in wood, founded by private individuals, at Brienz; a private school for weavers, at Trogen, canton Appenzell.—*J. D. Walters.*

THE State of Kansas has 266,575 children of school age, and 4,520 school-houses, an average of about sixty children to each school.

THE INDUSTRIALIST.

SATURDAY, APRIL 5, 1879.

The Mechanical Department has been "humping itself" lately. Extra hands are now employed.

It is a pleasure to be able to announce that the autograph delirium is gradually but surely abating.

The next meeting of the Board of Regents will be held in Manhattan on Tuesday next, at eight P. M., sharp.

The regular meeting of the Central Kansas Breeders' Association will be held this afternoon in the agricultural lecture room.

Messrs. Jasper Cowell and John Lewin, of Wakefield, formerly College students, spent a few days here this week with their friends.

The Cardiff Giant, that humbug which created so much excitement a few years ago, has been on exhibition in Manhattan this week.

Miss Ida L. Noyes and Mr. D. S. Leach graded ninety-nine in their studies, during the last month. There were sixty students who graded ninety-five or over.

The students had a surprise party at Rev. Parker's last night. The fact that Miss Grace was "sweet sixteen" on yesterday caused the gathering. A pleasant time is reported.

On Wednesday the new chapel in the Laboratory was used for general assembly for the first time. The new room is comfortable, commodious, and very convenient to the new building.

We learn that at a surprise party held at Mr. Campbell's last week, the young lady friends of Miss Ettie Campbell presented her with a fine photograph album. A compliment worthily bestowed.

The past week has been a busy one on the farm. Fifteen acres of oats have been drilled; while the orchard and six acres outside, with innumerable patches of lawns, have been seeded to various grasses, chiefly orchard-grass.

The College library has been moved into the east room on the first floor of the new building. Prof. Ward, with a number of students, has been engaged for several days in re-arranging the cases and books. The new location is a great improvement on the former one, and the change will be duly appreciated by all concerned.

The pensive senior, the emulous sophomore, and numerous young ladies and gentlemen unclassified, carry sticks, or should we say "canes." To see one of these young persons suspended to a sapling, and, with the utmost gravity, trying to guide it gracefully, recalls a remark dropped the other day by one of the younger students: "Why, he's learning to carry a cane!"

VanAntwerp, Bragg & Co., of Cincinnati, have lately issued a Kansas edition of their eclectic series of geographies. A copy of this work was received by the College last week. The part devoted to Kansas contains, besides many other good things, the finest and truest engraving that has yet been made of the College buildings and surroundings. We have sent for a duplicate copy of the cut, and expect ere long to be able to present it to our readers through the INDUSTRIALIST.

Ex-Governor Robinson, Governor St. John, Chief Justice Horton, and others, in behalf of the Board of Directors of the State Historical Society, are taking measures to increase the membership of the Society, and have issued a circular for that object. This Society is doing a work that is destined to benefit Kansas for all time, and we hope that many readers of the INDUSTRIALIST will see their way to becoming active, working members. We have been requested to nominate persons for election as annual members, and shall be glad to receive the names of persons interested.

Owing to the exhibition and explanation of the magic lantern by Prof. Failyer on Saturday evening, the Webster Society did not meet until eight o'clock. Vice-President Morrow took the chair. The order of debate was passed. Extemporaneous speaking was lively and interesting. Several important questions were discussed. Quite a number of ladies were present, and the Websters fully vindicated themselves of the charge of being afraid of the "ladies." Mr. Wood having prepared the *Reporter* and not being present, it was read by Mr. Rushmore. The paper contained many fine articles,—one by "Rumbler," giving a picturesque, comic view of "Bachelor Life." The paper was able in every respect, and reflects credit upon Mr. Wood's editorial ability. The name of Mr. J. F. Stevens was proposed for membership. The different orders having been passed, the programme will remain the same for the next meeting. S.

During the month of March the following students reached the first rank, having made an average grade of ninety-five or over in all their studies:

Abbott, Frank	Knostman, Emma
Allen, Chester	Leach, Darwin S.
Ayres, Sarah	Mason, S. C.
Blain, Arthur	McBratney, Wm.
Buchli, Bartholomew	Messenger, Charles
Buell, C. S.	Morrow, J. N.
Buell, Delight	Myers, Wirt S.
Call, Charles M.	Noyes, Amy
Call, Henry L.	Noyes, Ida L.
Campbell, Ettie	Parker, Grace
Campbell, May	Records, C. M.
Chenoweth, Charles	Reed, C. J.
Clarke, Ezra S.	Reeve, Mark
Coburn, Ella	Richardson, Noble A.
Coleman, E. P.	Rose, Geo. E.
Cowell, W. J.	Rose, Wm. N.
Cox, Lizzie R.	Rushmore, H. C.
Culter, H. M.	Salter, Lewis A.
Dickson, A. F.	Shartell, C. M.
Durkee, Orpheus	Short, Burton L.
Eckman, W. K.	Sickels, Maria E.
Farnsworth, H. E.	Sigman, Geo. L.
Favour, W. P.	Sikes, W. H.
Flack, John B.	Sloan, John A.
Hotchkiss, Charles S.	Smith, B. B.
Hunt, Henry L.	Strong, Grace
Hutsell, Sallie	Thackrey, Sarah
Jeffrey, Fletcher	Thompson, Geo. F.
Jeffrey, W. J.	Welch, J. C.
Kinsey, Dora	Wood, Clarence

April 4th the Alpha Beta Society met in the new chapel, as the organ had been moved thither, and is quite essential to the music part of our programme. Roll-call showed most of the members present. Debate on Napoleon and Cæsar. The latter decided to be the greater man. Debate followed by music, "O, Where is My Boy To-Night?"

The first part of the *Gleaner* was presented by W. H. Sikes. Several visitors dropped in about this time; among whom were Prof. Platt and wife, Miss Pechner, Prof. Failyer and Mr. John Griffing, the two latter being old members, who assisted in editing the first numbers of the *Gleaner*. The first part of the paper seemed to be well received, but modesty prevents us from speaking of it at length. It was followed by a well-rendered male quartette, entitled "Sweet and Low." Miss Sickels then presented the second half of the *Gleaner*. This was well read and very entertaining. In its columns was a piece giving the history of the *Gleaner*. It spoke of the founders of the paper with much respect. There was also a communication from Miss Jennie Coe which was of interest to all our members. After some discussion, extemporaneous speaking was passed. Miss Hutsell will read an essay next week, Hattie Mills will be prepared with a reading, and C. C. Chenoweth will deliver a declamation. Question for debate, "*Resolved*, That England was justifiable in declaring war against Afghanistan."

PROGREDIMUR.

NATIONALIST ITEMS.

New houses are springing up, as if by magic, all over the city.

The plum and peach trees were in blossom, for the first day, on last Sabbath, March 30th.

Judge Pipher is arranging for a cut-stone sidewalk in front of his property on Poyntz avenue.

Mr. Marlatt and others report that there will be few if any peaches this year, and that the apple crop is liable to be small.

The Ulrich Bros. are furnishing stone for the K. P. bridge pier. This young firm is among the most enterprising and business-like firms in town.

Gen. J. W. Davidson, who has been a Lieut. Colonel in the regular army, has been promoted to Colonel, which entitles him to one year's leave of absence, and it is possible that he will soon return to this place.

Last Sunday a prairie fire burnt up 1,200 bushels of corn, besides fencing and other things belonging to Joseph Haines, of Zeandale. Also, a large quantity of hedge belonging to the McDonalds and other parties.

A change is to be made in the post-office building that will give a little more room on the west side, and it will be extended to the rear so that the boxes can be moved further back, thus giving considerable more space in front.

Thirteen cars of very fine stock were shipped East on Monday. The stock could have been shipped on Sunday, but the shippers—who are among the largest and most prosperous in the county—preferred not to do this work on the Sabbath. We are glad to chronicle such things.

DIRECTIONS TO APPLICANTS.

TERMS OF ADMISSION.

Candidates for admission must be fourteen years of age, and pass a satisfactory examination in reading; arithmetic, through decimal fractions; and English grammar, to syntax. Classes are started at the beginning of each year in Drill in Arithmetic and Drill in English; and the pupil must have the knowledge above indicated, else he will be unable to retain position if admitted.

Pupils will be received at any time during the year, if able to pass an additional examination upon the subjects studied by the classes which they expect to enter. But they will find it greatly to their advantage to be present at the opening of each term, or as soon thereafter as possible.

GRADES.

Both the Literary and Industrial recitations are graded daily upon a scale of 100; and an examination of all classes is made at the close of each month. A student not attaining an average grade of sixty is promptly dropped to a lower class, or excluded from the Institution until able to do so. The work of grading is strict and uniform in all the departments, and this process is rigorously used for sifting out incompetent and indolent pupils; thus more than accomplishing all that is designed to be effected by a "high standard of admission." Hence, the student's continuance in the College wholly depends upon his own action.

The course is based upon the determination to make the labor required in the preparation of one industrial and three literary recitations as much as the average student can perfectly perform, in ten hours a day. We design to give the pupil the worth of the time expended at College; and, in order thereto, he must do a full day's work with brain or hand. Only those students who can maintain a standing of ninety in each study will be allowed to take more than the prescribed number of recitations; and no one will be permitted to have less than one industrial and three literary recitations.

RELIGIOUS.

Unless otherwise directed by parents, students are required to attend chapel at 8:30 A. M. on academic days, and divine service once every Sabbath.

EXPENSES.

There are no charges whatever for enrollment, attendance or instruction in the regular courses; nor are there any "contingent fees" for the repair of buildings, for the use of books or apparatus, for diplomas, or the kindred privileges usually grouped under the term "contingent." Male students are furnished instruction, the use of apparatus, instruments or tools, in both the literary and industrial classes marked out for them, without any charge. And the same is true of female students in the regular classes provided for them. Printing and Telegraphy are industrials primarily provided for the education of female students, and male students taking either of these are charged $1 per month for use of instruments.

Instrumental music is a fine art or "accomplishment," rather than a mechanical art. We do not place it among our "industrials" in the same sense, or for the same purpose, that we do those provided for teaching the trades. Accordingly, a fee of $12 per term, or seventy-five cents per week is required from female students for tuition and the use of pianos or organs.

The only charge made for material in either the literary or industrial departments is for the chemicals used by students in laboratory practice, which are furnished at wholesale prices, and amount to but a small sum.

Furnishing an absolutely free education is as much as can be reasonably asked; and the Institution neither boards, clothes, nor supplies the student with text-books. Boarding can be obtained in private families at from $2.75 to $4 per week. Washing costs from seventy-five cents to one dollar per dozen. Text-books, which can be procured in Manhattan, cost from $2 to $5 per term.

No student need expend over $5 per week; and many of our best pupils are living at $1.25 per week. Students desiring to "board themselves" can do so at from $1 to $2 per week. In a club of four young men, renting a house, the average cost to each for the term was $1.11 per week.

LABOR.

Manual labor by the students may be for either of two purposes: First, to acquire skill in a given art; second, to earn money. In the first case, the labor is educational; in the second, it should be paid for by the party benefited.

Educational Labor.—Manual labor in the reciations of the Industrial Departments, like mental labor in those of the Literary Departments, is purely educational and will not be remunerated. While the interest of the student will be held paramount in the direction of this labor, the practice necessary to dexterity will be required.

Remunerated Labor.—When the Institution needs labor on the Farm or elsewhere which is not educational, but simply for its own profit, and which a student is able and willing to perform, it becomes an employer instead of a teacher, and he an employe instead of a scholar. It pays for work, he works for pay. The relation between them is commercial, not educational; and both parties must act upon business principles. Hence, the College furnishes only such employment as its own interests require, and will pay according to the value of the service rendered at from seven to ten cents an hour.

AMOUNT EARNED.

It is impossible to predict how much a given person can earn, since that depends upon what he can do and what work there is to be done. Hence, it is wholly impossible for us to answer the question so often asked: "Do you think I can meet my expenses by work?" Some students make one-half their expenses, some the whole, and exceptional men have made more than expenses. As a rule, a faithful boy skilled in farm work can earn half his expenses on the Farm or in the Nursery. During the year he can ordinarily acquire sufficient skill in the wood or iron shops to enable him to make articles for sale. The whole question is one for his own consideration and decision. We can teach all who come, but cannot absolutely *promise* anything more. Hitherto we have refrained from holding out strong inducements respecting the amount of labor we might have to offer; but in view of the fact that during each of the last three years we have had more to do than the students could perform, we are inclined to give greater and positive encouragement on this point. Any boy who is in dead earnest, who is familiar with farm operations, and who can raise $50 to start with, should be able to carry himself through the four years' course. And certainly this places an education within the reach of every determined boy. As yet we are unable to offer similar advantages to girls, not requiring labor in the College departments which they can perform.

RULES.

1. Behave as a true man or woman should, at all times and in all places.

2. Attend to your own business promptly, thoroughly and courteously; and vigorously let alone that of other people.

3. Penalty: "Leave!"

PUBLICATIONS.

The "Hand-Book," published in 1874, containing a full discussion of the educational question and the aims of the Institution, will be forwarded to any one desiring it.

THE INDUSTRIALIST, a weekly journal edited by the Faculty and published by the Printing Department, contains original and seasonable articles on the Farm, Orchard, Trades, Sciences, and Education. Price, 75 cents a year. Address A. A. Stewart, Manhattan.

CALENDAR.

Winter Term 1879.—Began Friday, January 3d, 1879.

TO NEW STUDENTS.

Bring the text-books you have been using. On arrival, first arrange for your boarding. A. A. Stewart, Sup't Printing Department, will furnish information, either by letter or on application, concerning boarding places or rooms for rent. Report to the President at 8:30 A. M., immediately after chapel, for enrollment.

For further information apply to Jno. A. Anderson, President, Manhattan, Kansas.

LITERARY SOCIETIES.

ALPHA BETA.—Chartered, December 26th, 1870. Meets in College building every Friday at 2 P. M. Ladies admitted. New students cordially invited to attend. GEORGE PERRY, President.
MISS GRACE PARKER, Secretary.

WEBSTER.—Chartered, January, 1871. Meets in Telegraph Hall every Saturday evening. Visitors, especially students, always welcome.
C. E. WOOD, President.
C. M. SHARTEL, Secretary.

RAILROAD TIME-TABLE.

KANSAS PACIFIC RAILWAY.

PASSENGER ARRIVES.

No. 2, going East	11:14 A. M.
No. 4, going East	3:47 A. M.
No. 1, going West	5:10 P. M.
No. 3, going West	4:33 A. M.
No. 7 (freight), going West	8:15 A. M.

Nos. 1 and 2 run daily; Nos. 3 and 7 run daily except Monday; No. 4 runs daily except Sunday. Passengers with tickets are carried on No. 7.

GEO. C. WILDER, Agent.

THE INDUSTRIALIST.

SATURDAY, APRIL 5, 1879.

INDUSTRIAL EDUCATION.

The real value of an education to the student depends upon two things: First, the practical worth of the knowledge taught; and, second, the degree in which he makes it his own. Hence, the ability of any institution to give a practical education depends upon the kind and aim of the knowledge it teaches, and upon the thoroughness of the instruction therein. The State Agricultural College was directly endowed by Congress, and is guided by the State, for the specific purpose of furnishing to the industrial classes of Kansas a "practical" education, that is, "one fit for use." As its name indicates, and as the statistics of the industries of the State require, its chief work must be that of giving a useful and usable education to those who will engage in farming; and, therefore, the Farmer's Course must, from the nature of the case, be its main one.

FARMER'S EDUCATION.

Words and figures are merely instruments with which to record ideas. They are not themselves ideas, nor should they be made the chief end of an education. As a wagon is necessary to haul grain, so are they a necessary part of an education; but as the wagon is not the grain, so they are not the knowledge which the farmer converts into money. Hence, the classics and higher mathematics are not taught. But it will be noticed in the following course that so soon as the pupil acquires working skill in the use of the English language as a tool, and of figures and lines as mathematical tools, those arts and sciences which present knowledge that has a cash value to the farmer are taught as rapidly as their importance and thorough acquisition will permit. Studies numbered (1) and (4) in the second, third and fourth years are the spine of the course, to which the others are as ribs and muscle.

FARMER'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Practical Agriculture (advanced.)	1. Farm Economy, Special Hygiene.	1. Botany, Entomology.	1. Botany, Entomology.	1. Physiology.	1. Physiology.	1. Drill in English.	1. Drill in English.
2. Geology, Mineralogy.	2. Geology, Mineralogy.	2. Inorganic Chemistry.	2. Inorganic Chemistry.	2. Rhetoric.	2. Rhetoric.	2. Drill in Arithmetic.	2. Drill in Arithmetic.
3. Polit'l Economy, Practical Law.	3. Polit'l Economy, Practical Law.	3. Practical Geometry.	3. Industrial Drawing.	3. Algebra.	3. Algebra.	3. Industrial Drawing.	3. Industrial Drawing.
4. Zoology.	4. Zoology.	4. Horticul., Landscape Gardening.	4. Horticul., Landscape Gardening.	4. Practical Agricul. (elementary).	4. English Literature.	4. English Structure.	4. English Structure.
5. Agricul. Chemistry	5. Phys'c'l Geography, Meteorology.	5. Organic, Analytical Chemistry.	5. Organic, Household Chemistry.	5. Physics.	5. Physics.	5. Adv'd Arithmetic, Book-keeping.	5. Adv'd Arith., Book-keeping.
6. Logic.	6. Logic.	6. Practical Surveying.	6. Household Economy.	6. Industrial Drawing.	6. Industrial Drawing.	6. U.S. History, Industrial Drawing.	6. U. S. History, Industrial Drawing.

WOMAN'S EDUCATION.

Nearly one-half of our students are females, and the Woman's Course is prepared expressly for their liberal and practical education. We have no doubt whatever that practical men and women, who understand what it means and what it seeks to do, will fully endorse it.

WOMAN'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Farm Economy, Special Hygiene.	1. Farm Economy, Special Hygiene.	1. Botany, Entomology.	1. Botany, Entomology.	1. Physiology.	1. Physiology.	1. Drill in English.	1. Drill in English.
2. Geology, Mineralogy.	2. Geology, Mineralogy.	2. Inorganic Chemistry.	2. Inorganic Chemistry.	2. Rhetoric.	2. Rhetoric.	2. Drill in Arithmetic.	2. Drill in Arithmetic.
3. Polit'l Economy, Practical Law.	3. Polit'l Economy, Practical Law.	3. Industrial Drawing.	3. Industrial Drawing.	3. Algebra.	3. Algebra.	3. Industrial Drawing.	3. Industrial Drawing.
4. Zoology.	4. Zoology.	4. Horticul., Landscape Gardening.	4. Horticul., Landscape Gardening.	4. English Literature.	4. English Literature.	4. English Structure.	4. English Structure.
5. Phys'c'l Geography, Meteorology.	5. Phys'c'l Geography, Meteorology.	5. Organic, Household Chemistry.	5. Organic, Household Chemistry.	5. Physics.	5. Physics.	5. Adv'd Arith., Book-keeping.	5. Adv'd Arith., Book-keeping.
6. Logic.	6. Logic.	6. Household Economy.	6. Household Economy.	6. Industrial Drawing.	6. Industrial Drawing.	6. U. S. History, Industrial Drawing.	6. U. S. History, Industrial Drawing.

MECHANIC'S EDUCATION.

Because of the adaptedness of the leading course to the wants of the intelligent mechanic, it has been found practically unnecessary to diverge from the Farmer's Course. Additional studies, specially adapted to the mechanic's use, will be furnished in a Post-Graduate's Course.

If it be urged that the distinctively agricultural knowledge taught in the Farmer's Course is not directly valuable to the mechanic, we reply that, admitting the point for the purpose of argument, yet: 1. This knowledge is of more practical value to the mechanic than is the Latin, Greek, or a half dozen other things embraced in the usual course preparatory to the professions; 2. That the great majority of Kansas mechanics will also be more or less engaged in agriculture; 3. That those studies in the course which are directly valuable to the mechanic, together with the shop facilities, offer a better mechanic's education than can be elsewhere found west of the Alleghanies.

INDUSTRIAL DEPARTMENTS.

Having knowledge in the head is one thing; ability to use it with the tongue, fingers or feet is quite another thing. Both are vital to success in practical life. A man might thoroughly understand the theoretical principles of carpentry, and yet, not having used the tools, be wholly unable to earn carpenter's wages. So in all other vocations. Accordingly, instruction is given in the following well-equipped Industrial Departments, and every student is required to recite in some one of them, as selected by the pupil or parent:

FOR MALE STUDENTS.	FOR FEMALE STUDENTS.
The Farm.	Dress-making.
The Nursery.	Printing.
Carpentry.	Telegraphy.
Cabinet-making.	Scroll-sawing.
Turning.	Carving.
Wagon-making.	Engraving.
Painting.	Photography.
Blacksmithing.	Instrumental Music.

Each of these departments is conducted exactly as in daily life, and aims to give precisely the drill received by an apprentice. No charge is made, either for tuition or material, from male students taking the Industrials provided for them; nor from female students taking the ones provided for them, except in the Department of Instrumental Music. Male students taking either Printing or Telegraphy are charged $1 per month for the use of material and instruments.

DEPARTMENTS OF INSTRUCTION.

DEPARTMENT OF AGRICULTURE.

PRACTICAL AGRICULTURE.

Second Year:—General principles of breeding; history and characteristics of breeds; adaptation of different breeds for special purposes and localities; implements of simple tillage; mechanical principles involved in their construction; action of the plow upon soil and subsoil; principles of draught; influence of different adjustments upon draught; use of the dynamometer; value of hoed crops in a system of husbandry; the cultivation of corn and roots; soils that need drainage; how to lay out a system of drains; house drainage; sewerage.

Fourth Year: General view of agriculture, ancient and modern; agricultural progress of the last century; relative advantages of mixed husbandry and special farming; the selection and arrangement of the farm with reference to the system to be pursued; rotation of crops; general advantages of a rotation; the best rotation with reference to disposition of labor, production of manure, and extermination of weeds; pasturage and production of grain and forage crops; manures, how best housed and applied; composting manures; commercial fertilizers; systems of feeding; stall feeding; steaming food; soiling; experiments in feeding; farm buildings; farmhouses; barns.

FARM ECONOMY.

Woman's Course, Fourth Year: Dairy products as human food; influences affecting character of milk; manufacture of condensed milk; the factory system and household plan of cheese-making; treatment of rennet; general process of cheese manufacture; subsequent treatment of cheese; butter-making; creameries; "deep" and "shallow" setting systems; general process of butter-making; packing and preserving butter.

DEPARTMENT OF BOTANY AND PRACTICAL HORTICULTURE.

This department embraces a course of instruction in the elements of botany, structural and systematic, with a constant attention to the practical application of botany to the farm, orchard, garden, nursery and forest; also a course of lectures on Landscape Gardening. The instruction is mainly given by lectures, accompanied by regular practical drill in all the work of the fruit, vegetable and flower gardens, nursery, orchard, vineyard and ornamental grounds.

The lectures in Practical Horticulture embrace the following and kindred subjects: The relation of atmospheric motion, moisture and temperature to horticulture; seeds, the means of collecting and preserving; propagation, by seeds, cuttings, layers, suckers, grafting, budding; care of young plants; improvement of varieties; management of commercial and farm nursery; modes of pruning; the orchard; fruit suitable for orchard and garden culture; the flower, vegetable and fruit garden; importance and mode of forest culture; shelter belts and their influence; weeds and useful plants; noting the species of trees worthy of culture, either for profit or ornament.

LANDSCAPE GARDENING.

The lectures on Landscape Gardening not only unfold the accepted principles of the art, but at the same time give special attention to such applications of the art as may be made universally available in laying out and improvement of farms and the homes of the people. These lectures are accompanied by a practical drill in in the work of laying out and plotting grounds topographically.

CHEMICAL DEPARTMENT.

PHYSICS.

This includes a full consideration of the laws of mechanics, of liquids, gases and vapors, weights and measures, and specific gravity, followed by experimental study in the Physical Laboratory of the laws of heat, light, with spectrum analysis, electricity and magnetism, and the relation of these forces to plant and animal life. Text-book, Ganot.

INORGANIC CHEMISTRY.

This course is opened with a careful study of chemical forces and the laws governing chemical combination. The elements, with their compounds, are next considered in succession as to their history, properties, manufacture, and especially with regard to their uses on the farm and in the arts. These lectures are accompanied by an extended course of laboratory practice in which each student performs every experiment with his own hands. Text-book, Eliot & Storer.

ORGANIC CHEMISTRY.

This comprises a thorough study of the chemistry of the organic compounds, the composition of plants and of the various compounds derived from them. Constantly accompanied by laboratory practice.

CHEMICAL ANALYSIS.

In this course each student is furnished his stand in the Qualitative Laboratory, completely furnished with apparatus and chemicals for his own use. He here performs analyses of farm soils, plant ash, commercial manures, ores, mineral waters, commercial compounds, etc. After completing this course, he enters, if he desires, the Quantitative Laboratory, where he pursues a full course in quantitative analysis. Text-book, Kedzie's Manual.

AGRICULTURAL CHEMISTRY.

This includes a thorough consideration of the application of chemical principles to the economy of the farm; the origin and formation of soils; the classification and composition of soils; the analysis of soils and their adaptation to purposes of production; the composition and use of manures; composting; chemistry of farm operations, such as plowing, fallowing, draining, etc. Text-book, Johnson's "How Crops Feed."

METEOROLOGY.

Embracing the composition of the atmosphere; atmospheric pressure; temperature and humidity; laws of storms; rain, snow and atmospheric electricity. A full course in meteorological observations is taken under direction of the Signal Service. Text-book, Loomis' Meteorology.

MINERALOGY.

This includes the study of the laws of crystallography, with the properties, forms and uses of the principal minerals of the United States. Blowpipe analysis forms a very important part of the course, each student being required to name and identify a large series of minerals. Text-book, Dana's Mineralogy.

HOUSEHOLD CHEMISTRY.

A course of lectures on this subject is yearly delivered to a class of young ladies. The course embraces the chemistry of cooking; the composition of food; bread; tea, chocolate and coffee; butter and milk; ripening and preservation of fruits, etc.

SPECIAL COURSES

Are constantly in progress in Assaying, Pharmaceutical Chemistry and Photography.

ENGLISH LANGUAGE.

Words are simply tools used to express ideas; and, since the vast majority of our communications are made by the employment of spoken or written words, skill in using them is as profitable to the industrialist as dexterity with the needle is profitable to the seamstress. The direct aim of the course is to make the student skillful and intelligent in handling the machinery called language, just as an engineer handles a locomotive; and no drill will be omitted, or effort spared, to gain this end. Apart from the course itself, which is far more practical and complete than that usually found in literary colleges, the constant attention given this subject by all the departments, and especially the practice required in the printing classes, affords superior advantages to the student.

DRILL IN ENGLISH.

"As grammar was made after language, so ought it to be taught after language."—*Herbert Spencer.*

Drill in English embraces the following topics:

Sounds of the language; drill in producing the vocal, sub-vocal and aspirate elements with accuracy, distinctness and volume; vowels, consonants.

Letters: Form; power; rules for spelling, drill.

Words: Signification, properties, modifications, variations, relation and dependence.

Sentences: Drill in statement of ideas; description, clearness, terseness, vigor; business letters, discussion; capitalization; syllabication; punctuation; construction and analysis of sentences; elements, uses and names; criticism of compositions printed as written; proof reading; grammatical construction; superfluous words and clauses; drill in reading, speaking and penmanship.

Text-books: Webster's Academic Dictionary; Lee & Hadley's Advanced Lessons in Language.

Pupils deficient in spelling, etc., should enter the printing class, the printing-office being the work-shop of language.

STRUCTURE OF ENGLISH.

ELEMENTS OF WORDS.—The end aimed at in this study is to learn everything about words which will aid in their effective use. Among the topics included are:

Roots: What are they; their origin; their force and value as an element of language; the manner of their growth into different parts of speech.

Stems: Their derivation; their offices and properties; their relation to other parts of words.

Prefixes and Suffixes: The several sources whence derived; the relation of their force or significance to those sources; explanation of the laws and principles governing their use along with stems.

Compounds: Their value; their properties and uses; the laws governing their formation.

Synonyms: Definitions; causes of their abundance in English; the principles to be observed in choosing among them, to express a thought.

Criticism: This constitutes a prominent part of the exercises of the pupil through his whole course in the study of English. It not only diversifies and enlivens the class-room exercise, but reduces to practice the principles of the structure of the language. By this means, the student acquires not only a knowledge of English, but readiness and accuracy in speaking or writing it. The exercises in criticism embrace not only examination of selected matter, but original composition.

ELEMENTS OF SENTENCES.—The purpose in view in studying this subject is not to traverse the ground gone over in the study of grammar, but to fix in the mind of the student a clear understanding and remembrance of names, the properties and offices of the several classes of words entering into an English sentence, by showing him the reason of things; to make more simple, as well as interesting and practically useful, a study otherwise "dry and unprofitable" in many cases, by explaining the reason of the verbal forms and changes, the rules and maxims he is to remember and observe in his use of language. In the same manner he is conducted through a study of the mutual relations and dependencies of the several elements making up a sentence.

MATHEMATICAL DEPARTMENT.

Figures and lines, like words, are only instruments with which to convey ideas, or perform operations that cannot be easily done without them. The arithmetical principles used in business are few and simple; but accuracy and rapidity in computation are only gained by practice. College graduates often fail to retain clerkships, not because they do not know *why* given operations are performed, but because they can neither add, multiply or divide with that habitual correctness which renders their work reliable.

DRILL IN ARITHMETIC.

The chief design of this study is to make the student expert in the use of numbers, as employed by the industrialist for profit. The occupation of a successful farmer demands the application of every principle of practical arithmetic, and is taken as a starting point, rather than that of an abstract system. Beginning with a simple cash account, book-keeping is gradually developed to the full extent of its real utility. The areas of fields, expense of crops, construction of houses, sales of produce, and investment of capital, involve all the fundamental operations, and those of profit and loss, commission, taxes, insurance, exchange and stocks. Following this line, the student, so far from hammering away at "pure" science draws from the mathematical store-house what he needs, and sees why he needs it. Accuracy of calculation and posting, rather than a *mere* comprehension of the principles, is aimed at. Besides the recitation-room drill in business forms, practice in the field is also given. Estimating the number of cords in a pile of wood said to be 100x4x4 feet is one thing; measuring a pile of wood through which any number of cats may be harmlessly thrown, and in which four-feet sticks are the exception, is quite another and more difficult thing.

ARITHMETIC AND BOOK-KEEPING

Is a continuation of the above, having the same purpose and adopting such methods as the necessities of the class indicate. Thorough instruction in the principles and forms of business law is given. It will be seen that this method of teaching book-keeping, besides ensuring arithmetical practice, develops practical skill in that important art.

ALGEBRA.

Algebra is included in the course as a preparation for the study of Surveying.

DRAWING.

The practical value of Industrial Drawing can hardly be overestimated, first, because its study is the best drill for the development of the perceptive faculties, which are the ones most employed in daily life; and, second, because the working classes make a far greater use of lines than they do of figures. A farmer follows a line when laying a straight furrow; the carpenter uses the square and rule twenty times as often as he does figures; and a woman in cutting a pattern, or deciding that one bonnet is prettier than another, does so by the line or "form." So that either in its direct application, or in the exercise of that taste which comes from skill in using lines, this branch of mathematics is quite as important as a means of "mental discipline" as is the branch of computation, and is of far greater daily use. The admiral system of Prof. Walter Smith, Art Director of Massachusetts, is thoroughly followed through the grades of Free-hand, Geometrical, Object, Model, Perspective, Mechanical and Topographical Drawing, during the terms indicated by the Course of Study. In addition, constant practice in the application of lines to metal and wood is furnished in the Blacksmith, Carpenter, Turning, Scroll-sawing, Carving, Engraving and Printing shops, and to fabrics in the Sewing Department.

PRACTICAL GEOMETRY.

Not one farmer in a thousand ever uses the transit in surveying his land, the testimony of the county surveyor being decisive in court; but every farmer makes countless applications of lines and angles in laying off fields, roads, gardens, planning houses, determining levels, etc. The object of Practical Geometry is to teach the properties and uses of angles, and to make the student skillful in the application of lines to the field by the use of such simple instruments as are always within reach, or within his ability to construct; and accurate in the transferring of plans to the grounds, board or block.

PRACTICAL SURVEYING.

The drill in the use of figures and lines given by the mathematical course as above indicated, renders the mastery of surveying an easy task. There is no calculation made or formula used by the working engineer which cannot be readily understood and performed by a skillful arithmetician after proper instruction. The hand-book of the engineer is accordingly supplemented with such special guidance as is found necessary for a full comprehension of the mathematical principles and their applications; and extended field practice is required in the use of the compass, level, transit and theodlite.

STUDIES SPECIAL TO WOMAN.

Besides the studies already indicated, attention is called to the following:

SPECIAL HYGIENE.

As shown in the course, one term is devoted to the study of Physiology, from the text-book of Dr. J. C. Dalton. This is followed in the fourth year by a course of lectures to young ladies by Mrs. Cripps on the subject of Hygiene, embracing such instruction in hygienic matters as are valuable to woman.

FARM ECONOMY considers those affairs of the farm which usually come under the supervision of the farmer's wife or daughter, and which are not included in "gardening" or "household economy;" such as butter and cheese-making, dairy management, etc. A course of lectures is delivered by the Professor of Practical Agriculture. See heading, "Farm Economy."

GARDENING is included in Practical Horticulture. See heading, "Landscape Gardening."

HOUSEHOLD CHEMISTRY. See heading, "Household Chemistry."

HOUSEHOLD ECONOMY

Follows Household Chemistry and consists of lectures by Mrs. Cripps on the art of house-keeping, embracing cookery, domestic management, and kindred topics. Many elderly gentlemen sufficiently know, and more young gentlemen will duly discover, that systematic knowledge of how cooking ought to be done is luminously different from the ability to do it. Instruction without practice can effect but little. Accordingly, a kitchen laboratory has been completely furnished, and affords every facility for drill in the art of cooking. This drill chiefly differs from that of a kitchen in the respect that after a girl has learned to wash dishes or pare potatoes she is not kept everlastingly at either. After full trial, we have found it just as feasible to give this practice, with profit and pleasure to the pupil, as it is to give laboratory practice in chemistry,—and no more expensive.

Mathematics.—Practical, direct and thorough drill in Arithmetic, Book-Keeping, Industrial Drawing, Algebra, Geometry, Trigonometry, Surveying, Mechanics and Engineering. Work in Field, with Tape Line, Chain, Compasses, Transit and Level. The course is shaped for the benefit of the farmer, mechanic, or business man rather than for the benefit of the astronomer.

Special for Woman.—Special lectures on Farm Economy, by Prof. Shelton, discussing the Dairy, Poultry, etc. Gardening, by Prof. Van Deman, treating of the vegetable, flower, commercial and ornamental. Household Chemistry, by Prof. Failyer, consisting of the chemistry of cooking, bread, tea and coffee, butter, cheese, dyeing and coloring, bleaching, disinfectants, ventilation, etc. Special Hygiene, by Mrs. Cripps.

THE INDUSTRIALIST

VOL. IV. MANHATTAN, KANSAS, SATURDAY, APRIL 12, 1879. No. 52.

THE INDUSTRIALIST.

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Educational Labor.

Here is a point of confessed difficulty, and yet of vital importance. It is not concerned with college training only, but with our whole scheme of public education. The divorce between hand-work and head-work is so complete, and is maintained so long in the process of high-school and college education, that those who finish courses of study in either find it hard work ever to unite them again. Disuse of manual labor breeds distaste for it, and, as a consequence, the callings that require it are shunned, while those in which it can be evaded are so unmistakably overcrowded as to seriously disturb the balance of the body politic. This is the charge most frequently and persistently urged against the colleges established to further industrial education, that the tracks between them and industrial life all lead one way—that many go from shop and farm, but that none return to them again. Much of this criticism is thoroughly unfair and unjust; but there is certainly good ground for dissatisfaction with the results that we are obtaining in these several phases of our public education. The great extension of the high-school system of late years has called very general attention to this dangerous tendency, and thoughtful men have long been busy with the problem. The solution that is always the first to suggest itself is the manual labor school; but I think it may be said with truth that this scheme has been weighed in the balance and found wanting. In its common form it is an artificial combination of two incongruous elements—education that has no direct bearing on labor, and labor that has no connection with education. In the agricultural colleges that adopt compulsory manual labor, the case is somewhat better than in other institutions, for a small part of the labor required is educational. The student who expects to practice farming is learning, in the best possible way, a few of the things which he needs to know, and which he has not learned elsewhere. But for nine-tenths of the work required of him there can be no such claim. The object aimed at is avowedly moral rather than educational. It is to keep up the habit of manual labor that the system is enforced.

A measureable success can be secured for the scheme when it is made a central point, and when all the force of the institution is held tributary to it; but it may well be questioned whether the result is worth the price that is paid for it. For my own part, I am convinced that it is not, and I should feel that if the manual element in education were linked to this scheme—to stand or fall with it—its fortunes were already lost. What is needed is a system that shall *give manual training in an educational way*, and that can justify its introduction into an educational course on educational grounds. There is no country in the world where such a system is needed as much as in our own, and at no previous time in our history has the demand been as imperative as it is to-day.—*President Orton, of Ohio University.*

No State in the Union possesses equal attractions with Kansas to the breeders of pure stock of all kinds. We, in this whole central and southwestern region, are literally surrounded by the finest natural grazing lands in the world. If the number of fine-bred cattle were increased a thousand-fold, there would still be a demand for them; as it is at present Kansas cannot supply the demand made on her.

To young men of only moderate means, this is a particularly attractive field. It offers a better opportunity for the exercise of skill and judgment, with fewer risks, than grain growing, while the profits are immeasurably greater.—*Larned Chronoscope.*

IT is estimated that the entire value of the precious metals taken from the earth, up to the commencement of the Christian era, was $4,000,000,000; from then to the discovery of America, $4,000,000,000 more; to the year 1800, $9,000,000,000; to the close of 1842, $1,000,000,000; from then to the close of last year, $5,000,000,000: making a grand total of $23,000,000,000. The amount now in existence is estimated at $13,000,000,000, the balance having been consumed in art, or lost by casualties, fire and shipwreck. Of the amount still in existence, $8,000,000,000 is supposed to be in coin and bullion, $3,000,000,000 in watches, and the remainder in plate and jewelry. The greatest annual product was in 1873, when it reached $256,000,000.—*Exchange.*

THE English language may seem to inhabitants of the British Isles good enough for anybody, but on this side of the ocean we have some thousands of persons, with pretensions to education and culture, who make incessant complaint of the vernacular. According to these authorities the language lacks elegance and expressiveness; so at the slightest excuse they drop into some other tongue, that of France being for some inexplicable reason preferred. But now comes a learned German, who, having for fifteen years studied the language with that systematic persistency which is a peculiarity of the Teutonic mind and the terror of all others, pronounces the English language the most expressive, logical and satisfactory tongue of modern Europe. Unfortunately for the fancies of the literary *dilettanti*, Dr. Weisse, the authority alluded to, has written a book upon the language, in which he details the reasons so distinctly, and with such an array of linguistic facts as corroborative evidence, that no denial is possible. —*New York Herald.*

NEARLY two hundred Dunkers, or German Baptists, as they are often called, have just emigrated from Lancaster county, Penn., where so many of them have settled, to new homes in Kansas, Abilene and vicinity (Dickinson county) being where they are to pitch their tents. That is a fine agricultural region, and their long experience and their skill as farmers will make them very desirable citizens for the West. They have sold all their land, with improvements, in Pennsylvania, getting good prices, and have reinvested much of the money in Dickinson county, thinking it will be a better place for their children. As they have set out with their Bishop, ministers, and a full church organization, no colony that has gone beyond the Mississippi for years can be said to be better equipped. They are virtually one family, all of them being related either by blood or marriage. They were joined at Harrisburg by other Dunkers from the Cumberland Valley, and it is said that when they shall have reached Kansas they will number at least 1,000, embracing three generations. They are unusually well off, for emigrants, some of the families being worth from $60,000 to $70,000, and nearly all of them are in comfortable circumstances. More Dunkers have been going to Kansas recently than to any other western State, it is said, special inducements having been offered for them to settle there.—*New York Evangelist.*

THE total Chinese population of California to-day is estimated at about 100,000 to 750,000 whites. The Chinese are nearly all men, but of the whites the adult males probably number less than 200,000, making one Chinaman to every two white men.

KANSAS has 266,575 persons of school age, an increase of 33,700 in the past year.

Our Exchanges.

During last week the shipments of grain out of Kansas City eastward averaged seventy cars per day.—*Fort Scott Monitor.*

It is reported upon good authority that twenty-two families of Prussian Mennonites, representing $300,000, will locate on the Whitewater, in Butler county, about June 1st.—*Linn County Clarion.*

Messrs. Taylor & Warner have purchased new material, and will shortly commence the publication of a Democratic newspaper at Newton, Kans., called *The Bee.* These gentlemen are both practical printers, as well as active, enterprising young men, and we expect to see them publish a good paper. —*Emporia Ledger.*

The beauties of litigation are vividly portrayed in the case of Davidson vs. Jaquith. The case originated to recover the value of a colt, worth perhaps $30. The costs in the case amounted to nearly $1,000. Add to this the fees of the lawyers engaged in the prosecution of the case, and the reader can form some idea of the value of colts in Lyon county, and what it costs a man to indulge in the luxury of a lawsuit. —*Emporia Ledger.*

We learn from a gentleman who has just returned from Cowley county that the gold story is all a fable, or worse. He says, in contradiction of the statement that eastern capitalists had purchased large tracts of land for the purpose of mining, that the only transfer which had taken place in the county for a week was that of eighty acres, which was sold for $2,100,—$70 down and the balance to be paid in installments.—*Topeka Commonwealth.*

There is gold in every county of the State, which can be obtained in paying quantities by a judicious cultivation of the soil. In fact, many hardy, persistent miners have grown rich by taking out gold in this way, and many more are making preparations to imitate their example. Some day both young and old will find out this kind of mining, when diligently pursued, is the one above all others that yields certain, steady gains. The sooner the discovery is made and profited by, the sooner hard times will cease and the ranks of idleness be thinned.—*Clay Center Localist.*

The wonderful progress of the educational systems of our country and particularly of our State of Kansas, within the past ten or fifteen years, is a subject of constant satisfaction and congratulation at home and wonder and amazement abroad. The nations of the old world, after sending over to this country their best scholars and the most noted educators, who have made a close study of, to them, the wonderful anomaly, the conclusion that they very generally arrived at was that the genius of the American people, stimulated, encouraged and cherished, as well as protected, by the liberal and wise system, was the prime cause of the remarkable progress of American schools.—*Lawrence "Our Schools."*

A table of wages and the cost of living, with the price of staple articles of commerce, going back as far as the year 1200, has been published lately. It shows that wages during the thirteenth century were about fifty cents a week. In the next century they advanced some fifteen cents, and continued to advance slowly until, in the last century, they had reached $1.87. The average for farm labor in the same countries at present is $3.80 per week. Wheat in the thirteenth century averaged 72 cents, or eight and a half days' labor, a bushel. Now wheat is worth, wholesale, in Europe, about $1.46 a bushel, or two and a half days' labor. In six centuries meat has nearly trebled in price; but wages have increased more than sevenfold.—*Scientific American.*

THE INDUSTRIALIST.

SATURDAY, APRIL 12, 1879.

E. M. SHELTON, Managing Editor.

ASSOCIATE EDITORS, MEMBERS OF THE FACULTY.

Four Years Old.

Which the INDUSTRIALIST is to-day. This thought is suggestive of much moralizing,—much more, in fact, than we intend to indulge in. We wish only to state briefly something of the work and aims of this paper.

In some respects the INDUSTRIALIST occupies an anomalous position among the newspapers of the State. We have no "fight," nor are we interested in any. Strange as it may seem, we have never "bid" for the county printing; and the approach of a load of green, knotty wood does not suggest a conscience-smitten, delinquent subscriber.

We have opinions, as our readers will testify, but equally we "know our place." The merits of either of the great political parties, the INDUSTRIALIST has never concerned itself about. Although of the West and believing intensely in it, we have no "western system of finance," and equally no other. Even the "great investigation" has never been referred to in these columns.

But while the INDUSTRIALIST eschews politics and scandal, in all that pertains to what the New York *Nation* calls "perhaps the most energetic labor in the world," it has been and will be keenly alive. We have aimed to show frankly to all the people what the Agricultural College was doing, or had done. Its columns have been a faithful reflection of the general College work. In all economic questions, in agriculture and horticulture, in applied chemistry and mechanics, and especially in all questions bearing upon the relations of labor and learning, the INDUSTRIALIST has very positive opinions, which it has expressed and will continue to express both in season and out. While we are far from being satisfied with the cultivation given the "raw prairie" pre-empted by the INDUSTRIALIST four years ago, we still think that the crops have been better than the original weeds, and that, on the whole, the INDUSTRIALIST has done good.—*E. M. S.*

Drinking Water.

Several samples of well water have been received by the Chemical Department for analysis. The families using water from these wells were ill the greater portion of the fall and winter. These persons seemed peculiarly liable to any prevailing form of disease. After much sickness and several deaths, the water was suspected and brought to the Laboratory for the purpose above stated. On examination, it was found that most of the samples contained organic matter in more or less abundance. Besides the substances commonly found in "hard water," sodium chloride, common salt, was abundant in all the samples. This led us to suspect sewage contamination in some form. Upon inquiring, it was ascertained that in each case the wells were in close proximity to out-houses or stables; or, that kitchen slops were thrown near the well and permitted to soak off through the earth, to finally become incorporated with the well water. Where these sources of contamination are so situated that the strata incline toward the well, it is obvious that the water cannot long remain pure and potable. It will, in time, become impure, however favorably situated, if the distance be not great; for, at length, the soil will become saturated, and will permit the impurities to pass through.

If there is any one thing of more importance, in a sanitary point of view, than all others, it is a bountiful supply of healthful water. While true sewage contamination of the water-supply of cities has justly received the attention of boards of health and legislators, scarcely a thought has been given to the condition of our country wells. It is not the intention to make these samples of water a text for an extended treatise on this subject. But were we more careful to secure pure water, we would not be so often called upon to attribute the illness and death of friends to the mysterious ways of an inscrutable Providence.

A complete analysis of water requires considerable skill and a supply of reagents. But the following is a very simple test, which is in the reach of all: test for hydrochloric acid, by adding a solution of silver nitrate to the water, after acidulating with nitric acid. A white precipitate may be considered as indicating the presence of chlorine, and hence of common salt. This in itself is entirely harmless, but unless its presence can be accounted for otherwise, and the above means of contamination exist, it is fair to consider the presence of salt an indication that the water contains organic impurities as well. If the precipitate is any thing more than a very slight, milky appearance, the water should be discarded. —*G. H. Failyer.*

Education in Switzerland. No. VI.

The remarks about industrial education, which I made in No. V. of my articles, might lead one to misjudge the industrial life of the Swiss. A glance at the export tables of the country, however, shows that it stands, in many important branches of industrial art, in the front ranks of the manufacturing countries of Europe. Though nature has denied that land everything, so to speak, that brings wealth to others, yet, from its sterile rocks, glacier fields, mountain gorges, and poor table-lands, there are exported sufficient manufactures to support the two and a half millions of inhabitants, whose chief source of income, only half a century ago, consisted in mercenary warfare. And this change is owing to the unceasing energy of the goverument, in providing its citizens with a thorough and practical education.

Switzerland possesses a system of apprenticeship which the United States can only counterbalance with industrial schools. The public sentiment and the laws of the country, too, are such that will force the young men to a life of utility and hard work, something that cannot be said of our people and laws. Any boy who wants to learn a trade has a right to ask from his father, —or, if his father is poor, from his town,— such aid as may be required by him to realize his wishes. Again, no man is permitted to marry unless he can show the council of his town that he will be able to support a family by legitimate hand or brain work.

Of agricultural colleges, or agricultural schools, as they are modestly called, Switzerland has about a dozen. The one at Munsterlingen, situated on the beautiful banks of Lake Constance, and within gunshot distance of the gates of that historic city, is the most renowned of all. The Swiss agricultural schools differ materially from those of America. They admit only such pupils as can pass an examination in those branches of learning that are essential to a general education; and then they direct their entire energy to agriculture and such studies as are directly related to it; as, botany, zoology, mechanics, physics, chemistry, book-keeping, etc. Physical exercises and farm or garden labor are not neglected, to keep the pupils in the habit of doing something.

If there is anything in the system of industrial education in Switzerland that I would recommend to the world, and not only to Uncle Sam's family, for immediate imitation, it is the sewing school for girls. Every girl between the ages of seven and sixteen is bound by law to attend the sewing school, of which there is one in each school district. These schools are taught by a practical seamstress, and held regularly every Thursday and Saturday afternoon. All the regulations and laws concerning the primary schools apply with equal force to these institutions: the county inspector visits them regularly; the teacher is elected as the other teachers are; she must have a certificate of aptitude for the position; and she receives a fixed salary for her services.

The classical institutions of Switzerland differ little from those of Germany; and, as these are well known and deservingly appreciated by us, I will say but little of them.

The gymnasia, of which there are about twenty-five in Switzerland, are in the main preparatories for the universities, and are all cantonal institutions. Their motto is, Slow but sure. Their thoroughness in instruction is unsurpassed in any other educational field, and the courses cover eight long years. The principal studies of the lower classes are German and Latin; those of the middle classes, Greek, French, German, history, and geography; and those of the higher classes, literature, history of language, history of civilization, mental philosophy, mathematics, and a sprinkling of sciences.

The student's life in these institutions would be a dreary one, fossilizing him and leading him back step by step to the dead past, were it not for the many physical exercises, public exhibitions, and hazings which intersperse the monotony of the school-bench. The majority of students work hard; but the young aristocracy, too, frequents these institutions, and often enough without any definite aim. Fashion dictates that a rich man's son must go to the gymnasium. The result is, a constant struggle for supremacy between professors and that class of students. As the public sentiment is not against beer drinking, it would be an impossibility to stop them from frequenting the breweries and beer shops. Many make a practice of sitting at a certain beer table every night,—there studying their lessons, fighting their battles, smoking their pipes, and singing their peculiar poly-linguistic chants. Of course it is just the faction that studies without any aim which indulges in this life, and it must be said, too, that some of the greatest statesmen have in their time been leaders among these "renomists."—*J. D. Walters.*

The Times Still Ahead.

A statement showing the amount of postage paid by the different daily newspapers of Kansas.

[From THE TIMES, Nov. 28, 1878.]

It is the plain duty of THE TIMES to give the public, and particularly our advertising patrons, the facts concerning its circulation, in order that they may fully appreciate its value and importance as an advertising medium.

The surest way to obtain the exact circulation of the papers of the State outside of the counties in which they are published, is from the amount of postage paid by them to the Post-office Department.

Below we give the amount paid by THE TIMES, taken from the post-office receipts of this date.

The amount paid by other papers in the State is taken from the Atchison *Champion*, which claims to have the amount from official sources, and being published in its columns is evidence that it accepts it as correct so far as it is concerned.

THE TIMES, Leavenworth, Kansas	$882.96
Champion, Atchison, Kansas	336.36
Commonwealth, Topeka, Kansas	302.12
Patriot, Atchison, Kansas	112.26
Blade, Topeka, Kansas	107.36
Public Press, Leavenworth, Kansas	102.00
Monitor, Fort Scott, Kansas	73.40

From the above it will be seen that THE TIMES pays more than double the postage of any other daily paper in the State.

THE TIMES pays more postage than any other two daily papers in the State.

THE TIMES pays more postage than any other three daily papers in the State.

THE TIMES pays more postage than any other four daily papers in the State.

THE TIMES, after deducting the amount paid for postage by all the other daily papers in the State upon their exchange list, *pays more postage on its bona fide circulation than all the other daily papers in Kansas.*

THE TIMES has a circulation in the county of Leavenworth on which no postage is paid twenty times greater than any other paper in Kansas.

THE TIMES is this day enlarged four colums, and in addition to being the cheapest and best paper in Kansas, is the largest. Its State News department is alone worth the price of subscription, and is a special feature of the paper, which commends itself to those who desire to keep posted in regard to items of interest in Kansas.

THE TIMES is pre-eminently a newspaper, and with its new and increased facilities and additional editorial force, will command a place in every household in Kansas.

DAILY TIMES, per annum	$8.00
WEEKLY TIMES, per annum	1.25

Advertising rates reasonable.

Address D. R. ANTHONY,
Leavenworth, Kansas

THE INDUSTRIALIST.

SATURDAY, APRIL 12, 1879.

The poem entitled, "Farewell to the Old Barn," is taken from the last Alpha Beta *Gleaner*.

The class in Practical Horticulture has just finished a short course of lectures on foresty, and will next take up floriculture and landscape gardening.

Mr. J. Sharpe Walker and Judge Hagan, both of St. Marys, paid the College a hasty visit on Thursday. These gentlemen expressed themselves as much pleased with the College.

The Board of Regents was in session during Tuesday and Wednesday of this week, all the members being present. The question of the presidency was deferred until the May meeting.

The Tenth Annual Fair of the Riley County Agricultural Society will be held in Manhattan, September 23d, 24th, 25th and 26th, 1879. Liberal premiums are offered in all departments, and, what is better, these will be paid.

A large number (for the season) of applications for admission to the College are being received. It is noteworthy that a large proportion of these are accompanied by the statement that the writer intends to follow some industrial pursuit.

Silas Wegg like, we "drop into poetry" this week. The name of the poetess is withheld in order to shield the young lady from an annoying correspondence with autograph hunters and the editors of the New York and Boston magazines.

Our exchanges have often made kindly mention of the typographical appearance of the INDUSTRIALIST. The managing editor wishes to say that to the skill and industry of Mr. A. A. Stewart, and his class in printing, we are indebted for the neat appearance of this paper. Mr. Stewart's interest in his work has never flagged, and he succeeds in inspiring his students with similar feelings.

Among the visitors of this week must be mentioned Mr. and Mrs. Ward and Mr. Knapp, who came "overland" from their home in Dover, Shawnee county. Mr. and Mrs. Ward are enthusiastic, well-to-do farmers, and Mr. Knapp is quite well known as a breeder of Short-horns. Every year adds to the number of this class of our friends who find time and interest to look over the farmer's College.

The last meeting of the Central Kansas Breeders' Association, although devoted to routine work and matters of local interest, was well attended, and much interest was manifested. Among other important matters, it was decided that the Society will hold a breeders' institute and stock show during the coming fall. It was also voted by the Society to offer two valuable silver cups one each for the best small herd of cattle and swine.

The venerable "Bill Hood," the old Galloway bull, is soon to take his departure for a wider sphere of usefulness, he having been sold to go to Shawnee county. We shall miss the old friend. "No more will the astonished freshman greet thee with the inevitable 'Why, he looks just like a buffalo'; no more shall we have to inform the over-confident visitor that this is a Scotch, not an 'Irish,' breed; no more shall we have to explain how the effete and bloated English aristocracy prefers thy juicy steaks to those obtained from Short-horn, Hereford, or even the frisky Texan; no more ——" but we transcend the limits of the local item. We have not given up breeding Galloways.

Friday, April 11th, at 2 P. M., exercises of the Alpha Beta Society opened in the usual manner. England's actions toward Afghanistan were decided unjustifiable. Quartette No. 2 favored us with "A Name in the Sand." Owing to misunderstanding on the part of one, and sickness another, we missed our usual essay and declamation. A good reading by Miss Mills was followed by music, "Good Night." Extemporaneous speaking will be varied next week, by one member bringing in a question to which all the members will confine their remarks. A committee appointed at the special session on Tuesday, to arrange for a joint session at the invitation of the Webster Society, reported progress. Question for debate next week, "*Resolved*, That American citizens should not be allowed to vote unless they can read and write."

PROGREDIMUR.

ACKNOWLEDGMENTS.

A. Whitcomb, Lawrence, Kas. Descripiive catalogue of bedding and green-house plants.

Department of Agriculture, Washington, D. C. Collection of seeds, chiefly those of Japanese plants.

The Horticultural Department has lately received gratis from Mr. Wm. G. Voorheis, a good, practical horticulturist of northern Michigan, a nice lot of vegetable seeds. Thanks.

C. P. Mattocks, Portland, Maine. Catalogue of Berkshires, Cotswolds, Percheron horses, and Poultry. A very handsome and substantial catalogue, and well filled with choice pedigrees.

J. C. Stone, Esq., Leavenworth, Kas. Sale catalogue of Short-horn cattle. Sale, May 27th, 1879. L. P. Muir, auctioneer. This will prove, without doubt, the most important sale ever held in Kansas. Over eighty animals, many having the choicest pedigrees, will be offered.

As that lump of calcium sulphate known as the Cardiff Giant was in town last week, there was not as large an attendance at the Webster Society last Saturday evening as usual. The question as to the expediency of removing the capitol of the United States to the Mississippi Valley was decided in the affirmative. "Senator" Todd read the poem entitled, "The Picket," and Mr. Thompson declaimed. We had a very lively time under the head of extemporaneous speaking. A number of important questions were discussed. As was to be expected, there was a diversity of opinion, but a great many good points were made, which showed conclusively that the students of the College are improving every opportunity to inform themselves upon the leading topics of the day.

By a unanimous vote it was decided that the money which had been appropriated for the purchase of constitution and by-laws should be used to increase our library. Question for discussion next evening is, "*Resolved*, That after a man acquires a common-school education, he can learn more by travelling than reading. Affirmative, Mason and Salter; negative, Rushmore and Wood. The *Reporter* will be presented next Saturday evening by N. A. Richardson. L.

FRUIT PROSPECTS FOR 1879.

Having carefully examined the fruit buds on the College farm, since the cold spell some weeks ago, I find the facts to be about as follows:

The varieties of the apple which are most forward in their blooming, such as Ben Davis and Jonathan, have about half their bloom buds killed, so far as any fruit is concerned. Many blossoms that will expand have dead germs. But there are yet a sufficient number left that are alive to make an apple crop, if there is no further damage.

The peach buds are nearly all dead. It is certain that there will be very few peaches this year.

The cherries are also considerably injured. In some localities the injury is much worse than here.

The fruit buds of the pear are also damaged to such an extent that but few blossoms can perfect the bud.

The grapes, blackberries, and other small fruits are in a promising condition.

It is, however, the fact that often fruit trees bloom, but the buds have been so injured by the cold that they are too weak to perfect their fruit. Heavy rains and severe wind-storms, when the trees are in bloom, often destroys the pollen of the flowers and so prevents perfect fertilization.—*H. E. VanDeman.*

A FAREWELL TO THE OLD "BARN."

Farewell, old Barn, for we must part,
Though with a long-drawn sigh.
We'll often think of pleasant hours
Spent here in days gone by.

We'll miss these long familiar scenes,
Enclosed by these high walls,
Thy knife-hacked benches, dusty walls,
And squinting carpet in thy halls.

But most we'll miss thy chapel room,—
Its grand, imposing air,
The bench whereon our teachers sit,
Thy Presidential chair.

Thy arabesques and columns grand,
With their imposing form;
These seats the students rest upon
On every school-day morn.

With these we part, with many a pang,
For here 'twas first we met;
And here we heard the seniors spout,—
Such scenes we can't forget.

Thy ceiling, with its plastering gone,
Looks like a patchwork quilt;
Those paintings which adorn thy walls
Are framed in bands of gilt.

Thy windows, with their curtains lost,
Let in the golden light;
Thy ornamental chimneys next
Burst forth upon our sight.

The Faculty doth now appear,
With dignity sublime.
How well they fill these places
Meant for the sheep and swine.

Again, old Barn, we'll bid adieu,
And from our inmost heart
We'll thank the sheep, and Jersey cows,
For kindness on their part.

NATIONALIST ITEMS.

Some trees have been planted on the grounds around the Presbyterian Church.

Messrs. Stingley & Huntress are having a force-pump put down in front of their store.

Near Milford a species of quartz has been found in large quantities, which is hard enough to cut glass.

The new railroad bridge is now up and being painted. It is a great improvement over the old wooden one.

The park at the depot is creating quite a little interest. It is being laid out in style. Now for that fountain.

The wheelbarrow man, who trundled a wheelbarrow from New York to San Francisco, reached this place in good order last Saturday afternoon, on his return trip.

On Saturday last Horace Buel, who has been confined about two months on the charge of being accessory to the killing of P. W. Peak, was unconditionally released.

Somebody placed some beautiful chairs on the platform of the Congregational Church this week. It is suspected that Wadleigh and John Smith had something to do with it.

Just over the Blue River bridge is the great rendvzeous for immigrants. Almost any evening, one may see from half a dozen to fifteen wagons halting there for the night.

Since our last issue, this section has enjoyed a number of refreshing April showers. More rain is still needed, but the dry spell is broken, and everything indicates still further rainfall.

L. R. Elliott has a section of a cottonwood tree grown on his place that is just eight years from the seed, the solid wood of which measures seven inches in diameter. The growth amounted to very nearly an inch in a year from the start.

Last Monday John E. Hessin shot a splendid specimen of the pelican, measuring seven feet between the tips of the wings. It was mounted by Dr. Blachly, and presents a fine appearance. Manhattan is greatly favored in having such a taxidermist as Dr. Blachly.

The INDUSTRIALIST, published at the Agricultural College, Manhattan, is one of the neatest little sheets, in make-up and press-work, we have ever seen. Its contents are in keeping with its general appearance, all the articles being well written and interesting. Success to the little paper.—*Salina Herald.*

DIRECTIONS TO APPLICANTS.

TERMS OF ADMISSION.

Candidates for admission must be fourteen years of age, and pass a satisfactory examination in reading; arithmetic, through decimal fractions; and English grammar, to syntax. Classes are started at the beginning of each year in Drill in Arithmetic and Drill in English; and the pupil must have the knowledge above indicated, else he will be unable to retain position if admitted.

Pupils will be received at any time during the year, if able to pass an additional examination upon the subjects studied by the classes which they expect to enter. But they will find it greatly to their advantage to be present at the opening of each term, or as soon thereafter as posssble.

GRADES.

Both the Literary and Industrial recitations are graded daily upon a scale of 100; and an examination of all classes is made at the close of each month. A student not attaining an average grade of sixty is promptly dropped to a lower class, or excluded from the Institution until able to do so. The work of grading is strict and uniform in all the departments, and this process is rigorously used for sifting out incompetent and indolent pupils; thus more than accomplishing all that is designed to be effected by a "high standard of admission." Hence, the student's continuance in the College wholly depends upon his own action.

The course is based upon the determination to make the labor required in the preparation of one industrial and three literary recitations as much as the average student can perfectly perform, in ten hours a day. We design to give the pupil the worth of the time expended at College; and, in order thereto, he must do a full day's work with brain or hand. Only those students who can maintain a standing of ninety in each study will be allowed to take more than the prescribed number of recitations; and no one will be permitted to have less than one industrial and three literary recitations.

RELIGIOUS.

Unless otherwise directed by parents, students are required to attend chapel at 8:30 A. M. on academic days, and divine service once every Sabbath.

EXPENSES.

There are no charges whatever for enrollment, attendance or instruction in the regular courses; nor are there any "contingent fees" for the repair of buildings, for the use of books or apparatus, for diplomas, or the kindred privileges usually grouped under the term "contingent." Male students are furnished instruction, the use of apparatus, instruments or tools, in both the literary and industrial classes marked out for them, without any charge. And the same is true of female students in the regular classes provided for them. Printing and Telegraphy are industrials primarily provided for the education of female students, and male students taking either of these are charged $1 per month for use of instruments.

Instrumental music is a fine art or "accomplishment," rather than a mechanical art. We do not place it among our "industrials" in the same sense, or for the same purpose, that we do those provided for teaching the trades. Accordingly, a fee of $12 per term, or seventy-five cents per week is required from female students for tuition and the use of pianos or organs.

The only charge made for material in either the literary or industrial departments is for the chemicals used by students in laboratory practice, which are furnished at wholesale prices, and amount to but a small sum.

Furnishing an absolutely free education is as much as can be reasonably asked; and the Institution neither boards, clothes, nor supplies the student with text-books. Boarding can be obtained in private families at from $2.75 to $4 per week. Washing costs from seventy-five cents to one dollar per dozen. Text-books, which can be procured in Manhattan, cost from $2 to $5 per term.

No student need expend over $5 per week; and many of our best pupils are living at $1.25 per week. Students desiring to "board themselves" can do so at from $1 to $2 per week. In a club of four young men, renting a house, the average cost to each for the term was $1.11 per week.

LABOR.

Manual labor by the students may be for either of two purposes: First, to acquire skill in a given art; second, to earn money. In the first case, the labor is educational; in the second, it should be paid for by the party benefited.

Educational Labor.—Manual labor in the reciations of the Industrial Departments, like mental labor in those of the Literary Departments, is purely educational and will not be remunerated. While the interest of the student will be held paramount in the direction of this labor, the practice necessary to dexterity will be required.

Remunerated Labor.—When the Institution needs labor on the Farm or elsewhere which is not educational, but simply for its own profit, and which a student is able and willing to perform, it becomes an employer instead of a teacher, and he an employe instead of a scholar. It pays for work, he works for pay. The relation between them is commercial, not educational; and both parties must act upon business principles. Hence, the College furnishes only such employment as its own interests require, and will pay according to the value of the service rendered at from seven to ten cents an hour.

AMOUNT EARNED.

It is impossible to predict how much a given person can earn, since that depends upon what he can do and what work there is to be done. Hence, it is wholly impossible for us to answer the question so often asked: "Do you think I can meet my expenses by work?" Some students make one-half their expenses, some the whole, and exceptional men have made more than expenses. As a rule, a faithful boy skilled in farm work can earn half his expenses on the Farm or in the Nursery. During the year he can ordinarily acquire sufficient skill in the wood or iron shops to enable him to make articles for sale. The whole question is one for his own consideration and decision. We can teach all who come, but cannot absolutely *promise* anything more. Hitherto we have refrained from holding out strong inducements respecting the amount of labor we might have to offer; but in view of the fact that during each of the last three years we have had more to do than the students could perform, we are inclined to give greater and positive encouragement on this point. Any boy who is in dead earnest, who is familiar with farm operations, and who can raise $50 to start with, should be able to carry himself through the four years' course. And certainly this places an education within the reach of every determined boy. As yet we are unable to offer similar advantages to girls, not requiring labor in the College departments which they can perform.

RULES.

1. Behave as a true man or woman should, at all times and in all places.

2. Attend to your own business promptly, thoroughly and courteously; and vigorously let alone that of other people.

3. Penalty: "Leave!"

PUBLICATIONS.

The "Hand-Book," published in 1874, containing a full discussion of the educational question and the aims of the Institution, will be forwarded to any one desiring it.

THE INDUSTRIALIST, a weekly journal edited by the Faculty and published by the Printing Department, contains original and seasonable articles on the Farm, Orchard, Trades, Sciences, and Education. Price, 75 cents a year. Address A. A. Stewart, Manhattan.

CALENDAR.

Winter Term 1879.—Began Friday, January 3d, 1879.

TO NEW STUDENTS.

Bring the text-books you have been using. On arrival, first arrange for your boarding. A. A. Stewart, Sup't Printing Department, will furnish information, either by letter or on application, concerning boarding places or rooms for rent. Report to the President at 8:30 A. M., immediately after chapel, for enrollment.

For further information apply to Jno. A. Anderson, President, Manhattan, Kansas.

LITERARY SOCIETIES.

ALPHA BETA.—Chartered, December 26th, 1870. Meets in College building every Friday at 2 P. M. Ladies admitted. New students cordially invited to attend. GEORGE PERRY, President.
MISS GRACE PARKER, Secretary.

WEBSTER.—Chartered, January, 1871. Meets in Telegraph Hall every Saturday evening. Visitors, especially students, always welcome.
C. E. WOOD, President.
C. M. SHARTEL, Secretary.

RAILROAD TIME-TABLE.

KANSAS PACIFIC RAILWAY.

PASSENGER ARRIVES.

No. 2, going East	11:14 A. M.
No. 4, going East	3:47 A. M.
No. 1, going West	5:10 P. M.
No. 3, going West	4:33 A. M.
No. 7 (freight), going West	8:15 A. M.

Nos. 1 and 2 run daily; Nos. 3 and 7 run daily except Monday; No. 4 runs daily except Sunday. Passengers with tickets are carried on No. 7.
GEO. C. WILDER, Agent.

THE INDUSTRIALIST.

SATURDAY, APRIL 12, 1879.

INDUSTRIAL EDUCATION.

The real value of an education to the student depends upon two things: First, the practical worth of the knowledge taught; and, second, the degree in which he makes it his own. Hence, the ability of any institution to give a practical education depends upon the kind and aim of the knowledge it teaches, and upon the thoroughness of the instruction therein. The State Agricultural College was directly endowed by Congress, and is guided by the State, for the specific purpose of furnishing to the industrial classes of Kansas a "practical" education, that is, "one fit for use." As its name indicates, and as the statistics of the industries of the State require, its chief work must be that of giving a useful and usable education to those who will engage in farming; and, therefore, the Farmer's Course must, from the nature of the case, be its main one.

FARMER'S EDUCATION.

Words and figures are merely instruments with which to record ideas. They are not themselves ideas, nor should they be made the chief end of an education. As a wagon is necessary to haul grain, so are they a necessary part of an education; but as the wagon is not the grain, so they are not the knowledge which the farmer converts into money. Hence, the classics and higher mathematics are not taught. But it will be noticed in the following course that so soon as the pupil acquires working skill in the use of the English language as a tool, and of figures and lines as mathematical tools, those arts and sciences which present knowledge that has a cash value to the farmer are taught as rapidly as their importance and thorough acquisition will permit. Studies numbered (1) and (4) in the second, third and fourth years are the spine of the course, to which the others are as ribs and muscle.

FARMER'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Practical Agriculture (advanced.)		1. Farm Economy, Special Hygiene.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Geology, Mineralogy.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit. Economy, Practical Law.		3. Polit. Economy, Practical Law.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Zoology.		4. English Literature.		4. English Structure.	
5. Agricul. Chemistry		5. Physical Geography, Meteorology.		5. Physics.		5. Adv'd Arithmetic, Book-keeping.	
6. Logic.		6. Logic.		6. Industrial Drawing.		6. U. S. History, Industrial Drawing.	

WOMAN'S EDUCATION.

Nearly one-half of our students are females, and the Woman's Course is prepared expressly for their liberal and practical education. We have no doubt whatever that practical men and women, who understand what it means and what it seeks to do, will fully endorse it.

WOMAN'S COURSE.

FOURTH YE'R		THIRD YE'R.		SEC'ND YE'R		FIRST YEAR.	
Spring.	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*	*Spring.*	*Fall.*
1. Farm Economy, Special Hygiene.		1. Botany, Entomology.		1. Physiology.		1. Drill in English.	
2. Geology, Mineralogy.		2. Inorganic Chemistry.		2. Rhetoric.		2. Drill in Arithmetic.	
3. Polit'l Economy, Practical Law.		3. Practical Geometry.		3. Algebra.		3. Industrial Drawing.	
4. Zoology.		4. Industrial Drawing.		4. English Literature.		4. English Structure.	
5. Physical Geography, Meteorology.		5. Organic, Household Chemistry.		5. Physics.		5. Adv'd Arith., Book-keeping.	
6. Logic.		6. Household Economy.		6. Industrial Drawing.		6. U. S. History, Industrial Drawing.	

MECHANIC'S EDUCATION.

Because of the adaptedness of the leading course to the wants of the intelligent mechanic, it has been found practically unnecessary to diverge from the Farmer's Course. Additional studies, specially adapted to the mechanic's use, will be furnished in a Post-Graduate's Course.

If it be urged that the distinctively agricultural knowledge taught in the Farmer's Course is not directly valuable to the mechanic, we reply that, admitting the point for the purpose of argument, yet: 1. This knowledge is of more practical value to the mechanic than is the Latin, Greek, or a half dozen other things embraced in the usual course preparatory to the professions; 2. That the great majority of Kansas mechanics will also be more or less engaged in agriculture; 3. That those studies in the course which are directly valuable to the mechanic, together with the shop facilities, offer a better mechanic's education than can be elsewhere found west of the Alleghanies.

INDUSTRIAL DEPARTMENTS.

Having knowledge in the head is one thing; ability to use it with the tongue, fingers or feet is quite another thing. Both are vital to success in practical life. A man might thoroughly understand the theoretical principles of carpentry, and yet, not having used the tools, be wholly unable to earn carpenter's wages. So in all other vocations. Accordingly, instruction is given in the following well-equipped Industrial Departments, and every student is required to recite in some one of them, as selected by the pupil or parent:

FOR MALE STUDENTS.	FOR FEMALE STUDENTS.
The Farm.	Dress-making.
The Nursery.	Printing.
Carpentry.	Telegraphy.
Cabinet-making.	Scroll-sawing.
Turning.	Carving.
Wagon-making.	Engraving.
Painting.	Photography.
Blacksmithing.	Instrumental Music.

Each of these departments is conducted exactly as in daily life, and aims to give precisely the drill received by an apprentice. No charge is made, either for tuition or material, from male students taking the Industrials provided for them; nor from female students taking the ones provided for them, except in the Department of Instrumental Music. Male students taking either Printing or Telegraphy are charged $1 per month for the use of material and instruments.

DEPARTMENTS OF INSTRUCTION.

DEPARTMENT OF AGRICULTURE.

PRACTICAL AGRICULTURE.

Second Year:—General principles of breeding; history and characteristics of breeds; adaptation of different breeds for special purposes and localities; implements of simple tillage; mechanical principles involved in their construction; action of the plow upon soil and subsoil; principles of draught; influence of different adjustments upon draught; use of the dynamometer; value of hoed crops in a system of husbandry; the cultivation of corn and roots; soils that need drainage; how to lay out a system of drains; house drainage; sewerage.

Fourth Year: General view of agriculture, ancient and modern; agricultural progress of the last century; relative advantages of mixed husbandry and special farming; the selection and arrangement of the farm with reference to the system to be pursued; rotation of crops; general advantages of a rotation; the best rotation with reference to disposition of labor, production of manure, and extermination of weeds; pasturage and production of grain and forage crops; manures, how best housed and applied; composting manures; commercial fertilizers; systems of feeding; stall feeding; steaming food; soiling; experiments in feeding; farm buildings; farmhouses; barns.

FARM ECONOMY.

Woman's Course, Fourth Year: Dairy products as human food; influences affecting character of milk; manufacture of condensed milk; the factory system and household plan of cheese-making; treatment of rennet; general process of cheese manufacture; subsequent treatment of cheese; butter-making; creameries; "deep" and "shallow" setting systems; general process of butter-making; packing and preserving butter.

DEPARTMENT OF BOTANY AND PRACTICAL HORTICULTURE.

This department embraces a course of instruction in the elements of botany, structural and systematic, with a constant attention to the practical application of botany to the farm, orchard, garden, nursery and forest; also a course of lectures on Landscape Gardening. The instruction is mainly given by lectures, accompanied by regular practical drill in all the work of the fruit, vegetable and flower gardens, nursery, orchard, vineyard and ornamental grounds.

The lectures in Practical Horticulture embrace the following and kindred subjects: The relation of atmospheric motion, moisture and temperature to horticulture; seeds, the means of collecting and preserving; propagation, by seeds, cuttings, layers, suckers, grafting, budding; care of young plants; improvement of varieties; management of commercial and farm nursery; modes of pruning; the orchard; fruit suitable for orchard and garden culture; the flower, vegetable and fruit garden; importance and mode of forest culture; shelter belts and their influence; weeds and useful plants; noting the species of trees worthy of culture, either for profit or ornament.

LANDSCAPE GARDENING.

The lectures on Landscape Gardening not only unfold the accepted principles of the art, but at the same time give special attention to such applications of the art as may be made universally available in laying out and improvement of farms and the homes of the people. These lectures are accompanied by a practical drill in in the work of laying out and plotting grounds topographically.

CHEMICAL DEPARTMENT.

PHYSICS.

This includes a full consideration of the laws of mechanics, of liquids, gases and vapors, weights and measures, and specific gravity, followed by experimental study in the Physical Laboratory of the laws of heat, light, with spectrum analysis, electricity and magnetism, and the relation of these forces to plant and animal life. Text-book, Ganot.

INORGANIC CHEMISTRY.

This course is opened with a careful study of chemical forces and the laws governing chemical combination. The elements, with their compounds, are next considered in succession as to their history, properties, manufacture, and especially with regard to their uses on the farm and in the arts. These lectures are accompanied by an extended course of laboratory practice in which each student performs every experiment with his own hands. Text-book, Eliot & Storer.

ORGANIC CHEMISTRY.

This comprises a thorough study of the chemistry of the organic compounds, the composition of plants and of the various compounds derived from them. Constantly accompanied by laboratory practice.

CHEMICAL ANALYSIS.

In this course each student is furnished his stand in the Qualitative Laboratory, completely furnished with apparatus and chemicals for his own use. He here performs analyses of farm soils, plant ash, commercial manures, ores, mineral waters, commercial compounds, etc. After completing this course, he enters, if he desires, the Quantitative Laboratory, where he pursues a full course in quantitative analysis. Text-book, Kedzie's Manual.

AGRICULTURAL CHEMISTRY.

This includes a thorough consideration of the application of chemical principles to the economy of the farm; the origin and formation of soils; the classification and composition of soils; the analysis of soils and their adaptation to purposes of production; the composition and use of manures; composting; chemistry of farm operations, such as plowing, fallowing, draining, etc. Text-book, Johnson's "How Crops Feed."

METEOROLOGY.

Embracing the composition of the atmosphere; atmospheric pressure; temperature and humidity; laws of storms; rain, snow and atmospheric electricity. A full course in meteorological observations is taken under direction of the Signal Service. Text-book, Loomis' Meteorology.

MINERALOGY.

This includes the study of the laws of crystallography, with the properties, forms and uses of the principal minerals of the United States. Blowpipe analysis forms a very important part of the course, each student being required to name and identify a large series of minerals. Text-book, Dana's Mineralogy.

HOUSEHOLD CHEMISTRY.

A course of lectures on this subject is yearly delivered to a class of young ladies. The course embraces the chemistry of cooking; the composition of food; bread; tea, chocolate and coffee; butter and milk; ripening and preservation of fruits, etc.

SPECIAL COURSES

Are constantly in progress in Assaying, Pharmaceutical Chemistry and Photography.

ENGLISH LANGUAGE.

Words are simply tools used to express ideas; and, since the vast majority of our communications are made by the employment of spoken or written words, skill in using them is as profitable to the industrialist as dexterity with the needle is profitable to the seamstress. The direct aim of the course is to make the student skillful and intelligent in handling the machinery called language, just as an engineer handles a locomotive; and no drill will be omitted, or effort spared, to gain this end. Apart from the course itself, which is far more practical and complete than that usually found in literary colleges, the constant attention given this subject by all the departments, and especially the practice required in the printing classes, affords superior advantages to the student.

DRILL IN ENGLISH.

"As grammar was made after language, so ought it to be taught after language."—*Herbert Spencer.*

Drill in English embraces the following topics:

Sounds of the language; drill in producing the vocal, sub-vocal and aspirate elements with accuracy, distinctness and volume; vowels, consonants.

Letters: Form; power; rules for spelling, drill.

Words: Signification, properties, modifications, variations, relation and dependence.

Sentences: Drill in statement of ideas; description, clearness, terseness, vigor; business letters, discussion; capitalization; syllabication; punctuation; construction and analysis of sentences; elements, uses and names; criticism of compositions printed as written; proof reading; grammatical construction; superfluous words and clauses; drill in reading, speaking and penmanship.

Text-books: Webster's Academic Dictionary; Lee & Hadley's Advanced Lessons in Language.

Pupils deficient in spelling, etc., should enter the printing class, the printing-office being the work-shop of language.

STRUCTURE OF ENGLISH.

ELEMENTS OF WORDS.—The end aimed at in this study is to learn everything about words which will aid in their effective use. Among the topics included are:

Roots: What are they; their origin; their force and value as an element of language; the manner of their growth into different parts of speech.

Stems: Their derivation; their offices and properties; their relation to other parts of words.

Prefixes and Suffixes: The several sources whence derived; the relation of their force or significance to those sources; explanation of the laws and principles governing their use along with stems.

Compounds: Their value; their properties and uses; the laws governing their formation.

Synonyms: Definitions; causes of their abundance in English; the principles to be observed in choosing among them, to express a thought.

Criticism: This constitutes a prominent part of the exercises of the pupil through his whole course in the study of English. It not only diversifies and enlivens the class-room exercise, but reduces to practice the principles of the structure of the language. By this means, the student acquires not only a knowledge of English, but readiness and accuracy in speaking or writing it. The exercises in criticism embrace not only examination of selected matter, but original composition.

ELEMENTS OF SENTENCES.—The purpose in view in studying this subject is not to traverse the ground gone over in the study of grammar, but to fix in the mind of the student a clear understanding and remembrance of names, the properties and offices of the several classes of words entering into an English sentence, by showing him the reason of things; to make more simple, as well as interesting and practically useful, a study otherwise "dry and unprofitable" in many cases, by explaining the reason of the verbal forms and changes, the rules and maxims he is to remember and observe in his use of language. In the same manner he is conducted through a study of the mutual relations and dependencies of the several elements making up a sentence.

MATHEMATICAL DEPARTMENT.

Figures and lines, like words, are only instruments with which to convey ideas, or perform operations that cannot be easily done without them. The arithmetical principles used in business are few and simple; but accuracy and rapidity in computation are only gained by practice. College graduates often fail to retain clerkships, not because they do not know *why* given operations are performed, but because they can neither add, multiply or divide with that habitual correctness which renders their work reliable.

DRILL IN ARITHMETIC.

The chief design of this study is to make the student expert in the use of numbers, as employed by the industrialist for profit. The occupation of a successful farmer demands the application of every principle of practical arithmetic, and is taken as a starting point, rather than that of an abstract system. Beginning with a simple cash account, book-keeping is gradually developed to the full extent of its real utility. The areas of fields, expense of crops, construction of houses, sales of produce, and investment of capital, involve all the fundamental operations, and those of profit and loss, commission, taxes, insurance, exchange and stocks. Following this line, the student, so far from hammering away at "pure" science draws from the mathematical store-house what he needs, and sees why he needs it. Accuracy of calculation and posting, rather than a *mere* comprehension of the principles, is aimed at. Besides the recitation-room drill in business forms, practice in the field is also given. Estimating the number of cords in a pile of wood said to be 100x4x4 feet is one thing; measuring a pile of wood through which any number of cats may be harmlessly thrown, and in which four-feet sticks are the exception, is quite another and more difficult thing.

ARITHMETIC AND BOOK-KEEPING

Is a continuation of the above, having the same purpose and adopting such methods as the necessities of the class indicate. Thorough instruction in the principles and forms of business law is given. It will be seen that this method of teaching book-keeping, besides ensuring arithmetical practice, develops practical skill in that important art.

ALGEBRA.

Algebra is included in the course as a preparation for the study of Surveying.

DRAWING.

The practical value of Industrial Drawing can hardly be overestimated, first, because its study is the best drill for the development of the perceptive faculties, which are the ones most employed in daily life; and, second, because the working classes make a far greater use of lines than they do of figures. A farmer follows a line when laying a straight furrow; the carpenter uses the square and rule twenty times as often as he does figures; and a woman in cutting a pattern, or deciding that one bonnet is prettier than another, does so by the line or "form." So that either in its direct application, or in the exercise of that taste which comes from skill in using lines, this branch of mathematics is quite as important as a means of "mental discipline" as is the branch of computation, and is of far greater daily use. The admiral system of Prof. Walter Smith, Art Director of Massachusetts, is thoroughly followed through the grades of Free-hand, Geometrical, Object, Model, Perspective, Mechanical and Topographical Drawing, during the terms indicated by the Course of Study. In addition, constant practice in the application of lines to metal and wood is furnished in the Blacksmith, Carpenter, Turning, Scroll-sawing, Carving, Engraving and Printing shops, and to fabrics in the Sewing Department.

PRACTICAL GEOMETRY.

Not one farmer in a thousand ever uses the transit in surveying his land, the testimony of the county surveyor being decisive in court; but every farmer makes countless applications of lines and angles in laying off fields, roads, gardens, planning houses, determining levels, etc. The object of Practical Geometry is to teach the properties and uses of angles, and to make the student skillful in the application of lines to the field by the use of such simple instruments as are always within reach, or within his ability to construct; and accurate in the transferring of plans to the grounds, board or block.

PRACTICAL SURVEYING.

The drill in the use of figures and lines given by the mathematical course as above indicated, renders the mastery of surveying an easy task. There is no calculation made or formula used by the working engineer which cannot be readily understood and performed by a skillful arithmetician after proper instruction. The hand-book of the engineer is accordingly supplemented with such special guidance as is found necessary for a full comprehension of the mathematical principles and their applications; and extended field practice is required in the use of the compass, level, transit and theodlite.

STUDIES SPECIAL TO WOMAN.

Besides the studies already indicated, attention is called to the following:

SPECIAL HYGIENE.

As shown in the course, one term is devoted to the study of Physiology, from the text-book of Dr. J. C. Dalton. This is followed in the fourth year by a course of lectures to young ladies by Mrs. Cripps on the subject of Hygiene, embracing such instruction in hygienic matters as are valuable to woman.

FARM ECONOMY considers those affairs of the farm which usually come under the supervision of the farmer's wife or daughter, and which are not included in "gardening" or "household economy;" such as butter and cheese-making, dairy management, etc. A course of lectures is delivered by the Professor of Practical Agriculture. See heading, "Farm Economy."

GARDENING is included in Practical Horticulture. See heading, "Landscape Gardening."

HOUSEHOLD CHEMISTRY. See heading, "Household Chemistry."

HOUSEHOLD ECONOMY

Follows Household Chemistry and consists of lectures by Mrs. Cripps on the art of house-keeping, embracing cookery, domestic management, and kindred topics. Many elderly gentlemen sufficiently know, and more young gentlemen will duly discover, that systematic knowledge of how cooking ought to be done is luminously different from the ability to do it. Instruction without practice can effect but little. Accordingly, a kitchen laboratory has been completely furnished, and affords every facility for drill in the art of cooking. This drill chiefly differs from that of a kitchen in the respect that after a girl has learned to wash dishes or pare potatoes she is not kept everlastingly at either. After full trial, we have found it just as feasible to give this practice, with profit and pleasure to the pupil, as it is to give laboratory practice in chemistry,—and no more expensive.

Mathematics.—Practical, direct and thorough drill in Arithmetic, Book-Keeping, Industrial Drawing, Algebra, Geometry, Trigonometry, Surveying, Mechanics and Engineering. Work in Field, with Tape Line, Chain, Compasses, Transit and Level. The course is shaped for the benefit of the farmer, mechanic, or business man rather than for the benefit of the astronomer.

Special for Woman.—Special lectures on Farm Economy, by Prof. Shelton, discussing the Dairy, Poultry, etc. Gardening, by Prof. Van Deman, treating of the vegetable, flower, commercial and ornamental. Household Chemistry, by Prof. Failyer, consisting of the chemistry of cooking, bread, tea and coffee, butter, cheese, dyeing and coloring, bleaching, disinfectants, ventilation, etc. Special Hygiene, by Mrs. Cripps.